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Hickey Mountain - Table Mountain

Oil and Gas Field Development Record of Decision and Final EIS

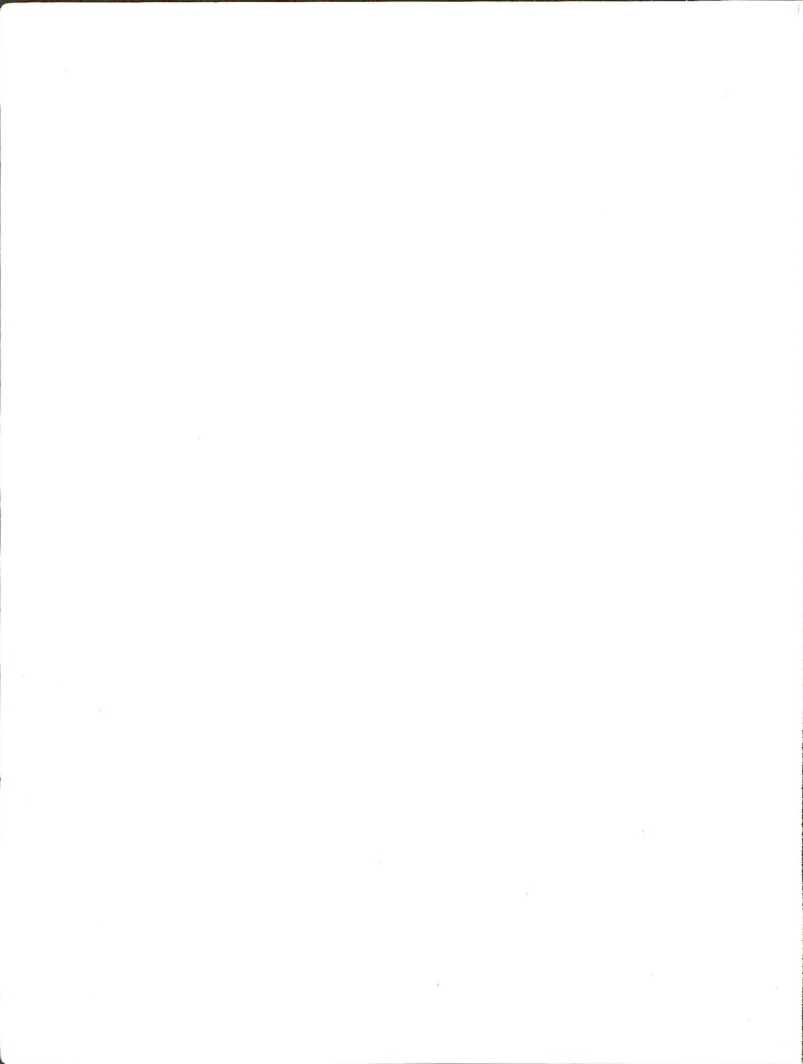


Department of the Interior
Bureau of Land Management
Department of Agriculture
Forest Service

May 1987

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United States Department of the Interior

Bureau of Land Management
Wyoming State Office
P.O. Box 1828
Cheyenne, Wyoming 82003

Dear Reader:

The Record of Decision and Final Environmental Impact Statement for the Hickey Mountain-Table Mountain Oil and Gas Field Development Project are bound together in this document and provided for your information and use.

The Record of Decision, in compliance with the National Environmental Policy Act, outlines the decisions and rationale (management considerations) for the analysis presented in the Hickey Mountain-Table Mountain Project Environmental Impact Statement (EIS). Key management considerations, are described. Required environmental impact statement mitigation measures, and compliance and monitoring requirements are provided.

A comment period is not required by regulation for decision documents. However, since this record of decision is issued at the same time as the final EIS (attached), a concurrent public review period of 30 days is provided. Your comments on this record of decision are welcome, and should be addressed to Donald Sweep, District Manager, Bureau of Land Management, P.O. Box 1869, Rock Springs, Wyoming 82902-1869; Dale Bosworth, Forest Supervisor, Wasatch-Cache National Forest, 125 South State Street, Suite 8226, Salt Lake City, Utah 84138; Dean Zeller, District Manager, 2370 South 2300 West, Salt Lake City, Utah 84119.

The second part of this document is the Final Environmental Impact Statement. It is a complete final EIS in that it incorporates all of the information published in the draft EIS issued in January 1987.

The final EIS reflects changes to the original Proposed Action including: the addition of wells proposed to be drilled adjacent to the study area in Utah, the consideration of using an existing gas processing plant also in Utah, and the increase in well spacing density in some of the area, from 1 to 2 wells per square mile. In addition, one of the major proposed gas processing plants is not now proposed to be located on federal land, but on private surface within the study area. Other portions of this document have been corrected or rewritten to provide clarification of content. Comment letters received on the draft EIS and our responses to them are appended to this document.

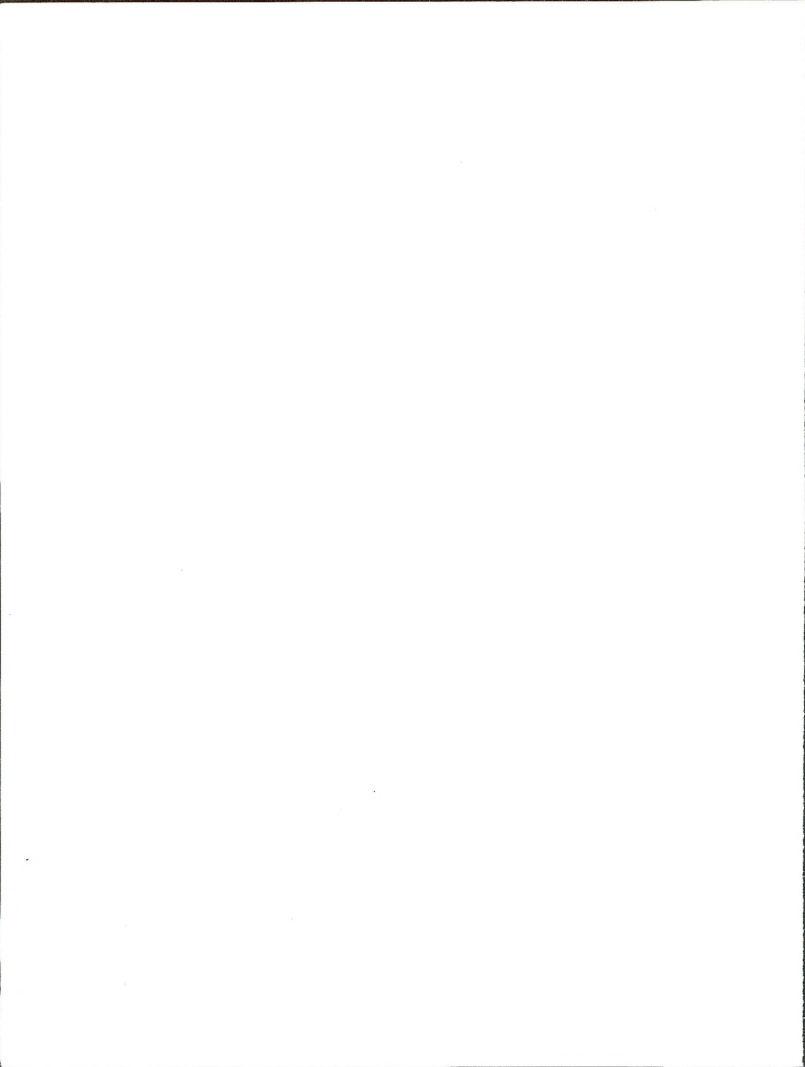
In accord with the Council on Environmental Quality (CEQ) regulations, this final EIS incorporates a number of other documents by reference. The supporting technical reports are available for review at the address previously noted.

Please send comments on the final EIS to:

State Director (934)
Bureau of Land Management
Wyoming State Office
P.O. Box 1828
Cheyenne, Wyoming 82003

Sincerely,

Hillary A. Oden
Wyoming State Director
Bureau of Land Management



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RECORD OF DECISION
for
HICKEY MOUNTAIN - TABLE MOUNTAIN
OIL AND GAS FIELD
DEVELOPMENT PROJECT

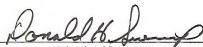
Prepared By:

U.S. Department of the Interior
Bureau of Land Management

U.S. Department of Agriculture
Forest Service

June 1987

RECOMMENDATION



District Manager
Rock Springs, Wyoming
Bureau of Land Management

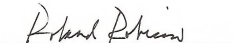


District Manager
Salt Lake City, Utah
Bureau of Land Management

DECISION



Wyoming State Director
Bureau of Land Management



Utah State Director
Bureau of Land Management



Forest Supervisor
Wasatch-Cache National Forest
Forest Service

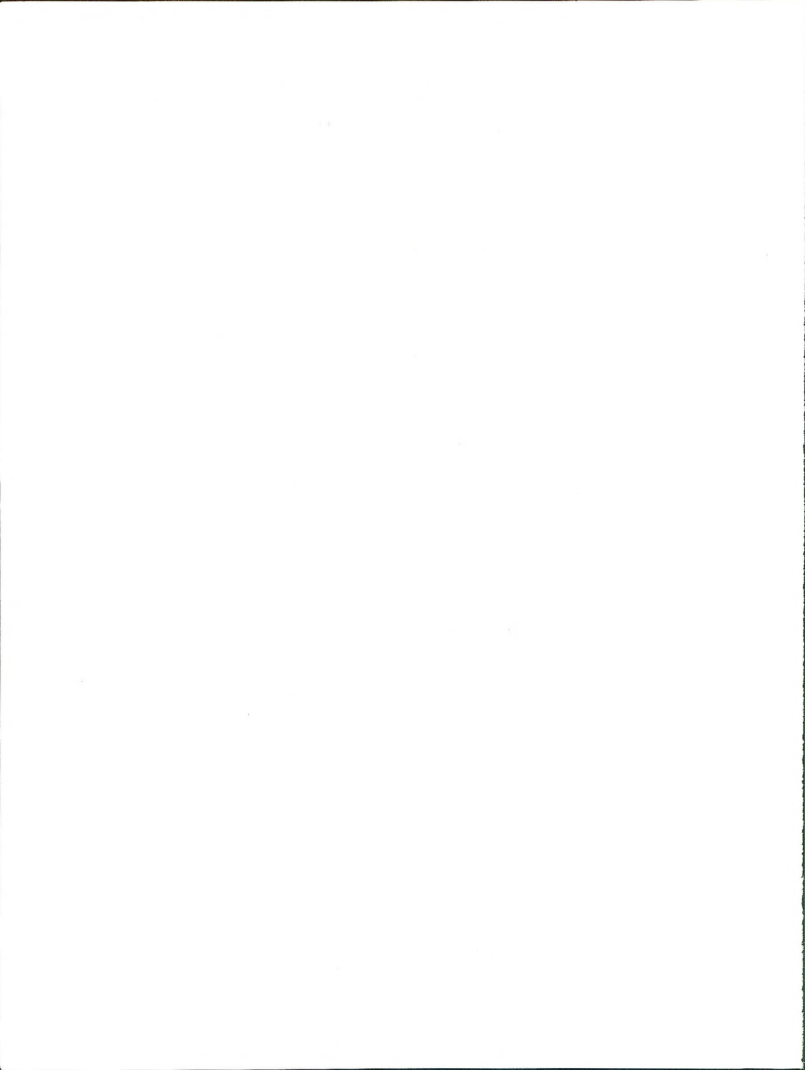
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SUMMARY

INTRODUCTION

This record of decision (ROD) is for the Hickey Mountain - Table Mountain oil and gas field development project which includes the construction, operation, maintenance, and abandonment of a deep oil and gas well field in southwestern Wyoming. Portions of development also extend into east central Utah. Specific items in the project proposal include drilling up to 56 new production wells; drilling up to 14 pressure maintenance injection wells; constructing and using 62.2 miles of collector and well access roads; construction and operation of hydrocarbon production and gas processing facilities; construction and use of product pipelines, and truck transport of products; and construction and use of telephone and electric powerlines. The project represents individual proposals made by:

1. Sun Exploration and Production Company
2. Diamond Shamrock Exploration Company
3. American Quasar Petroleum Company
4. Texaco Inc.
5. General Atlantic Energy
6. Conoco Inc.
7. Mountain Fuel Company
8. Phillips Petroleum Company
9. Anadarko Petroleum Company

The applicants have submitted plans of development to the U.S. Department of the Interior Bureau of Land Management (BLM) and the U.S. Department of Agriculture, Forest Service (FS), that contain Applications for Permit to Drill (APD), Rights-of-Way (ROWs), and Special Use Permit (SUP) information. An environmental impact statement (EIS) was prepared jointly by the BLM and the FS. The BLM in Wyoming assumed the administrative lead and was responsible for filing the EIS with the Environmental Protection Agency. The Final EIS is bound with this document, and follows the Record of Decision.

The project area contains National Forest, public, private, and state lands. The intermixed ownership complicates management of field development. The decisions made in the Record

of Decision concern activities on federal surfaces only. Any decisions made for use of private or state lands are outside the jurisdiction of the BLM or FS.

In addition to the proposed project, numerous component alternatives have been evaluated. These include additions or deletions to the collector road system, changes to sites or sizes of production and processing facilities, and piping all hydrocarbons versus trucking of liquid hydrocarbons (oil, condensate, natural gas liquids). The No Action alternative and the Agency Preferred alternative, a combination of portions of the Proposed Action and of component alternatives, were also analyzed.

DECISION SUMMARY

The BLM and FS have jointly identified the Agency Decision to be the Agency Preferred Alternative, with the recognition that this decision can only affect activities as they occur on public or National Forest lands. This decision is described in full in the STATEMENT OF DECISION section of this record of decision.

Forest Service decisions (i.e., well field roads, powerlines, pipelines, mitigation measures, etc. occurring off unit and authorized by Forest Service Special Use Permits) are subject to appeal pursuant to the Secretary of Agriculture appeal regulation, 36 CFR 211.18. Notice of appeal must be in writing and submitted within 45 days from the date of this decision. A statement of reasons to support the appeal and any request for oral presentation must be filed within the same 45-day period for filing a notice of appeal. An appeal of this decision does not halt implementation of the project. A stay of the decision may be requested by submitting information explaining what action they want stopped and why. The Forest Service plans to implement the decisions 30 days after the date the ROD is signed.

The BLM decision to allow for field development in this area is not subject to administrative review, however, since this ROD has been issued at the same time as the Final EIS, a concurrent review period of both the Final EIS and this ROD will be allowed. At the end of this 30-day period,

SUMMARY

If no significant adverse comments requiring amendment of the decision are received, individual actions allowed by this ROD will be approved (provided all preauthorization requirements are met). The approvals of individual actions (wells, roads, powerlines, pipelines, etc. authorized by APDs or ROWs) are subject to administrative review (protest) pursuant to 43 CFR 4.

The BLM and/or FS will grant or renew use authorizations in accordance with the provisions of appropriate federal regulation for the public lands and resources under their respective administrative jurisdiction.

The federal, state, county, and local actions that would be required to implement any of the applicants' proposed projects would generally be the same regardless of the location. These actions are listed in Table 1-1 (federal actions, state actions, county, and local actions) in the final EIS.

As part of the process of issuing the various required authorizations, the agencies require compliance with measures to mitigate potential impacts. These required measures are identified in Appendix B of the final EIS (attached) and would be required regardless of the designs of the proposed activities.

APDs, ROWs, SUPs, and other site specific applications will incorporate project approved mitigation measures into their design before approval will be made. Additional site specific mitigation measures may be applied. Whenever a proposal would require an exception to an existing lease stipulation, the exception would be specifically considered in the environmental reference report or other analysis on the authorizing action.

Review of the approved APDs or Construction and Use Plans (CUPs), required for ROWs, can be arranged by contacting the appropriate issuing office.

For ROWs or APDs on BLM administered public lands in Wyoming contact:

Rock Springs District
Kemmerer Resource Area Manager
(307) 877-3933

Green River Resource Area Manager
(307) 362-6422.

For SUPs on FS administered lands contact:

Wasatch-Cache National Forest
Mountain View District Ranger
(307) 782-6555.

For APDs approved on FS administered lands in Wyoming contact:

(BLM) Rock Springs District
Kemmerer Resource Area Manager
(307) 877-3933

For APDs approved on FS administered lands in Utah contact:

(BLM) Salt Lake District Manager
(801) 524-6761.

SUMMARY OF ISSUES

Several concerns about the Hickey Mountain - Table Mountain Project were raised during the scoping period (November 1985) and comment period on the draft EIS (January and February 1987). Issues with potentially significant effects from the project included big game seasonal range areas, landslide hazards, water quality, visual resources, and transportation systems. Other issues, with lower levels of effects included: timber and range management, vegetation, fisheries, threatened and endangered species, recreation, air quality, health and safety, geology, and social and economic environments. While protected by law from any adverse impacts caused by development, special cultural and paleontological resources in the area will require special attention.

STATEMENT OF DECISION

Based upon the analysis of environmental consequences described in the Hickey Mountain - Table Mountain Oil and Gas Field Development EIS, and in consideration of all public, state and federal agency comments, industry scoping, and written comments received, the BLM and FS have jointly identified the Agency Decision to be the Agency Preferred Alternative with the recognition that this decision can only affect activities as they occur on public or National Forest lands. Map ROD-1 displays the agency preferred alternative.

This decision is in conformance with the goals, objectives, standards, and guides of the Wasatch-Cache National Forest Land and Resource Management Plan (1985). The decision is also in conformance with the BLM Kemmerer Resource Area Resource Management Plan (1985), the BLM Salt Wells Resource Area Management Framework Plan (1982), and the Big Sandy/Salt Wells Oil and Gas Environmental Assessment (1981).

The Agency Decision was selected on the basis of the comparative analysis presented in Chapter 4 of the Final EIS and the impacts which would result from the implementation of this Alternative with all applicable mitigation. All practical means to avoid or minimize environmental harm have been adopted. Intensive inspection and enforcement will be performed to ensure that the decisions are carried out in accordance with required mitigation.

The agencies and applicants will be required to provide resources to ensure that the comprehensive resource monitoring program described in Chapter 4 of the Final EIS is implemented. Specifically, monitoring of wildlife and fisheries, water quality, and soil will be required. In addition, inventory and management strategies for cultural resources will be implemented.

The Agency Decision would have fewer overall adverse impacts to resources than the other alternatives (allowing field development) considered. Implementation of the Agency Decision would be subject to the mitigation measures identified in the Final EIS. Other measures subsequently identified and deemed necessary by the Authorizing Officer (AO) may be added.

The BLM and FS have entered into a Memorandum of Understanding (MOU) that establishes agreement and procedure for overseeing implementation of the Hickey Mountain -

Table Mountain Project ROD. This agreement provides for review and quality control of required applicant plans for construction, operation, maintenance, and termination of proposed facilities and well field development.

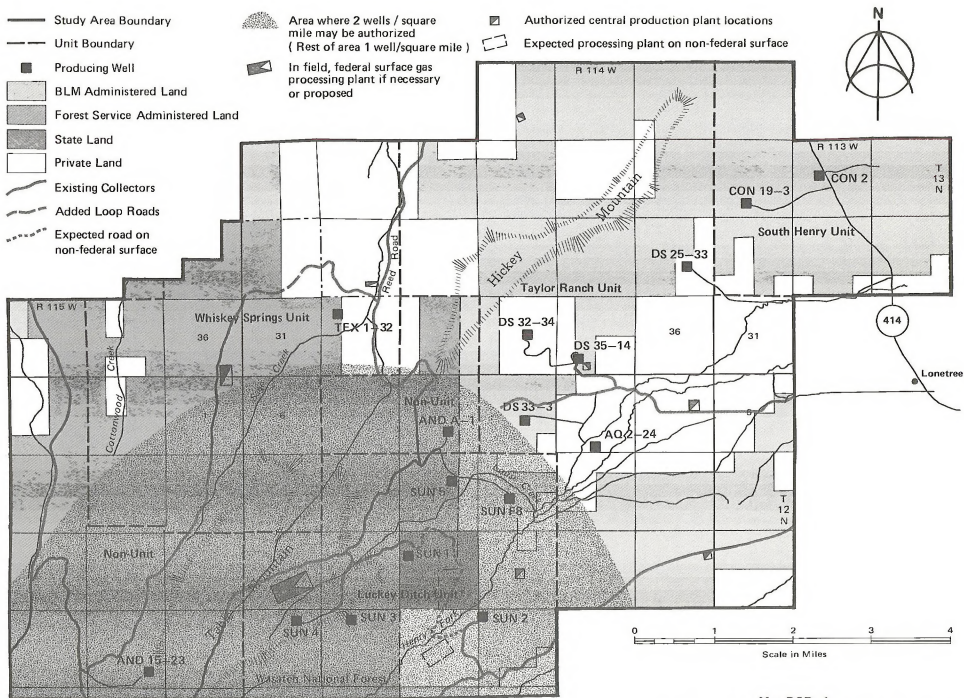
A description of the Hickey Mountain - Table Mountain Project components and associated actions as they would be permitted for each applicant, follows.

PRODUCTION AND INJECTION WELLS

As many as 56 new production wells and 14 pressure maintenance gas injection wells are authorized with this decision. Production well spacing would be 1 or 2 wells per square mile, as shown on Map ROD-1. Before any development occurs within the well field area, each lessee or unit operator would be required to submit an APD. The process for issuing APDs is described in the Final EIS in Chapter 1 and Appendix C. Approval of an APD would include site-specific application of the mitigation measures to well siting. A description of the lease operator activities that would require issuance of an APD is summarized by applicant in the Final EIS in Chapter 2. APDs require the approval of BLM, whether affecting National Forest or public lands because BLM has the responsibility and authority to regulate oil and gas drilling and associated activities on National Forest and public lands, according to federal regulations. Some wells may be proposed on National Forest land underlain by private minerals. Authorization for activities under these circumstance would be by Forest Service Special Use Permit.

COLLECTOR ROADS AND WELL ACCESS ROADS

Existing collector roads are authorized with this decision. Addition of the proposed loop between Sage Creek Road and Texaco Well No. 1-32 is authorized as well. (See map ROD-1). Roads would be constructed according to Forest Service Region 4 Road Guidelines on both public and National Forest lands.



Map ROD-1
Agency Preferred Alternative & Non-Federal Actions

STATEMENT OF DECISION

Site-specific construction plans would be subject to approval by the authorized officer. Collector roads would be open to all public traffic unless they collectively exceed the miles per square mile density standard for National Forest lands. Then selected collector roads would be closed to public travel. Well access roads within the study area would be gated to allow only official company or agency vehicles. Designated primitive roads will be closed to all vehicles and obliterated on the National Forest portion of the area. A Forest Supervisor's Closure will be put into affect to prevent vehicle use of the National Forest off of designated roads.

PRODUCTION AND GAS PROCESSING FACILITIES

Hydrocarbon production facilities are authorized as follows (see Map ROD-1): Anadarko, American Quasar, Conoco, and General Atlantic Energy - production facilities at the well head (within previously disturbed pad area only); Texaco - one manifold at proposed smaller plant location (4 acres) and one production plant at larger plant location (36 acres) within the Whiskey Springs Unit; Diamond Shamrock - one production plant north of Hickey Mountain (10 acres) and one production plant (20 acres) plus two manifolds (4 acres each) in the southern $\frac{2}{3}$ of Taylor Ranch Unit; Sun - 2 new production facilities (5 acres each) south of Henrys Fork River and in the northwest part of the unit. The approval of actual acreage available for disturbance will be made at time of specific proposals. In this manner, sizes of production facilities may be much smaller than those tentatively proposed for the Whiskey Springs and Taylor Ranch Units. In addition, any company may use well head production facilities rather than centralized facilities.

Gas processing is authorized as follows: Companies producing gas within the field will

make use of the existing Phillips processing facility which will be upgraded to the capacity necessary to process all field produced gases. A second processing facility for gases produced within the field may be provided by Sun. The location at Alternative Luckey Ditch (5) (Section 18, T. 12 N., R. 114 W.) would be authorized for the 65 acre site.

PRODUCT TRANSPORT

All hydrocarbons produced within the field shall be transported via pipeline to destination production facilities, processing plant, or markets. No trucking of oil, condensate, natural gas liquids, or gases shall be authorized under normal operations, unless specifically determined by the AO to be necessary, considering the number of truck trips and the distance to available pipelines. Whenever possible, separate streams of individual companies shall be combined to reduce the total number of pipelines required. Where multiple pipelines are needed, they will be buried in a common trench.

POWER SOURCES

Electric power will be provided by the company authorized by the Wyoming Public Service Commission. Major powerlines into the field shall avoid crossing wetland areas. One substation near the eastern or southern boundary of the study area will be authorized within the field under this decision. Electric power will be distributed within the field via elevated lines if above 25kV, or buried lines if below 25kV in capacity (unless specifically authorized to be elevated). Site specific location of lines will be determined when the substation is specifically proposed. Any proposed telephone lines will be subject to individual review.



MANAGEMENT CONSIDERATIONS

ISSUES

Issues were determined from public scoping and agency knowledge of the area and its resources. Issues of interest include:

Wildlife, particularly the seasonal habitats of big game species.

Sensitive soils, major landslide hazards exist in the area.

Water quality, rivers and streams in the area exhibit high quality. There is a highly permeable subsoil that contributes to a high quality aquifer.

Visual resources, proposed full field development would change this natural setting into an area heavily influenced by man.

Transportation systems, the National Forest Land and Resource Management Plan has set limits to roads allowed within the National Forest.

Vegetation would be disturbed.

Recreation patterns would be disturbed.

Timber management and grazing management may be disturbed.

Fisheries, especially those containing the Colorado Cutthroat Trout, could be affected.

Social and economic environments would benefit from additional employment and royalties resulting from full field development.

Air quality would be slightly affected by addition of more gas processing plants in the area.

Human health and safety is a concern in oil and gas field development.

Production of the geologic resource in the area was an issue.

Threatened and endangered, or sensitive species are sometimes present in the area.

Special paleontological resources are found within the area.

Special cultural resources are found within the area.

IMPACT CONCLUSIONS

Impacts identified and analyzed in the EIS are expected to occur initially in and around the Luckey Ditch Unit. Impacts would occur on outlying areas when and if discoveries and development expand from initial development areas.

Wildlife impacts from full field development under all alternatives will be greatest to elk that use the study area for calving and wintering. The area of initial impact contains elk calving range and winter range. Other impacts to wildlife would involve development activities in moose and mule deer winter, and crucial winter ranges. Moose crucial winter range would be disturbed during initial development. Field development would disturb big game animals already impacted by recreational and oil and gas traffic on roads within the study area, and by hunting and timber harvest activities. Mitigation measures would be applied to field development activities to limit these impacts.

The Hickey Mountain - Table Mountain area is characterized by historic and existing landslide activities. Landslide hazards exist within much of the area. Other soil issues involve salinity, rapid permeability, and high erosivity. The number of miles of road and pipelines, and acres of plant sites and well pads would affect these sensitive soils. Highly sensitive soils would be avoided where practical. Construction practices would be strictly regulated to mitigate necessary disturbances to fragile soils or those posing difficulties to rehabilitation.

The watershed is characterized by perennial and intermittent streams that drain into the Upper Green River and thence the Colorado River system. Salinity and sediments from this area are easily dislodged from soils during construction activities and introduced into this river system. The Bishop Conglomerate is a highly permeable subsurface formation which occurs under much of the study area. The numerous fresh water springs issue from this conglomerate. Problems causing limited sedimentation and petroleum introduction to waters have occurred in the past. Additional field development will increase this operational risk, but applied mitigation measures and other controls will limit the increase.

MANAGEMENT CONSIDERATIONS

The visual characteristics of the area will be changed. Field development, including roads, wells, production and processing plants, would create a human-influenced setting, replacing the moderately natural visual surroundings that presently exist. The facilities will be sited and designed to take advantage of visual screening from vegetation and topography, and painted to more closely match the surroundings.

The National Forest portion of the study area contains various types of roads including primitive two-tracks and upgraded, gravelled roads. The many miles of roads place the area at the high end of approved road density standards prescribed in the Wasatch-Cache National Forest Land and Resource Management Plan (1985). Authorization of field development roads will force the closure and reclamation of existing primitive roads, and the gating of new roads to preclude unauthorized traffic, in order to meet density standards. Public access into the National Forest portion of the area will decrease as primitive roads are closed. Public access into the public land portion of the area is not readily available now, and will not improve with full field development.

Vegetation will be removed during construction and partially replaced by permanent structures. The remaining disturbance will be reclaimed to provide soil stability and replacement of vegetation, as near to natural conditions as is possible.

Recreational opportunities within the study area will change as roads are opened or closed to public traffic. In general, vehicle access will be come more restricted. Non-vehicle access will continue to be available throughout the study area. Recreationists will need to contend with oil and gas field activities and traffic, or avoid the area.

Timber management opportunities would be increased by the number of roads in the area. However, there are no commercial timber sales planned for the area within the next ten years. Livestock management may be disturbed, as domestic animals may avoid areas of heavy activity, forage would be lost until reclamation was successful, and some animals may be lost from collisions with vehicles. This latter risk will be significantly reduced with piping of product rather than trucking.

Fisheries in the area depend on the present high water quality. If water quality declined, fisheries would decline as well. Many measures would be applied that would limit threats to fisheries,

including the prohibition from crossing Sage Creek and Little Sage Creek with roads.

The social and economic environments would benefit as a number of new jobs were provided, and royalty payments accrued to federal and state governments. Individual companies could develop an economic hydrocarbon field.

Air quality would be slightly impacted. The area wind patterns and the low levels of emissions are not expected to contribute to an air pollution problem. Appropriate emission control devices would be installed and used.

With application of traffic controls, and adequate safety measures for workers in the field, human health and safety would not be at risk. No sour gas is anticipated to occur within the target geological formations.

Worldwide production of oil and gas has declined in the last few years, due mainly to the market price of these products. This has contributed to a decreased supply. Oil and gas occurs in the subject area in quantities large enough to sustain production over a period of 20 to 30 years even with current market prices.

Threatened and endangered species are protected by law. Development activities would be subject to the application of mitigation measures to provide this protection. No net impacts to populations or habitats of bald eagles, peregrine falcons, whooping cranes, or black-footed ferrets are anticipated.

The Bridger Formation occupies about 1/3 of the acreage within the study area. This formation has provided substantial paleontological data to the scientific community. Measures would be applied to protect resources in the Bridger Formation, while additional paleontological data would probably be found.

Special cultural resources in the area would be inventoried prior to disturbance in order to prevent their destruction. These inventories would provide additional cultural resources information to the scientific community.

DECISION RATIONALE

The following management considerations were key in the decision to authorize the selected Hickey Mountain - Table Mountain Oil and Gas Field Development activities.

MANAGEMENT CONSIDERATIONS

Production and Pressure Maintenance Wells

Leaseholders must be given their legal right to develop their various leases. Thus, the Federal Government (BLM and FS) is obliged to approve or disapprove APD actions for the active federal oil and gas leases.

Site-specific APDs, can be denied on environmental grounds, but drilling must be allowed at some reasonable location on the lease, with reasonable mitigation measures.

The BLM and FS are committed to ensuring that APDs and other authorizations are based upon and supported by the Hickey Mountain - Table Mountain Project EIS and the resource data base, and that these authorizations comply with all requirements to mitigate potential impacts. In furtherance of this commitment, the BLM and FS have developed the APD Environmental Reference Report and Decision Notice procedure described in Appendix C of the Final EIS.

Collector and Local Access Roads

Site-specific road locations will be subject to on-the-ground analysis and the Environmental Reference Report and Decision Notice procedures cited above. The Wasatch-Cache National Forest Land and Resource Management Plan (1985), road density standards will be used. As new roads are constructed, existing roads will be closed. Local well access roads will be gated, and a Supervisor's Closure instituted, to prevent other than official company or agency traffic.

Selection of the Agency Preferred Alternative will prevent unnecessary loop road construction that would adversely impact crucial wildlife seasonal ranges, or be constructed on unstable soils. However, the decision on this component does not affect company activities that may occur on private or state lands.

Hydrocarbon Production and Processing Facilities

Management considerations paramount to the selection of the Agency Preferred Alternative were as follows:

Location of processing at the existing Phillips plant would place much of expected field activity at an existing site that wildlife have become accustomed to over the last 20 years. The section

18 site (Luckey Ditch alternative 5), would place a new plant site away from elk calving and winter ranges and crucial winter ranges for moose and mule deer. Use of manifolds and fewer production facilities within Whiskey Springs and Taylor Ranch unit would limit human activities to fewer locations.

Specific siting of facilities would be subject to on-the-ground analysis and selection of the best site in terms of avoiding problem soils. Upgrading of the Phillips plant would be located near to the Henrys Fork River, but would require only 2 acres of new disturbance. These items would minimize potential sedimentation to area waterways. Siting of the Luckey Ditch unit plant in section 18 would place it on the Bishop Conglomerate, necessitating care in use of facilities. However, this location away from the river would reduce overall risk of water contamination from accidental spills.

Selection of the Agency Preferred Alternative minimizes the visual impact by utilizing the already existing Phillips plant and siting a new processing plant where it could be screened by existing trees.

Product Transport

The Agency Decision is to require piping of all hydrocarbon products, even if combination of the same product produced by different companies is required. This decision will avoid potential truck traffic hazards to wildlife and to other users of the area. Exceptions may be allowed by the AO after consideration of the number of truck trips per day, distance from existing pipelines, and local environment. Increased human population and its related impacts, (e.g., legal and illegal hunting and fishing, wildlife harassment, road kills, and unintentional disturbance, etc.) would be less with the Agency Decision because trucking of liquids within important wildlife range would not be allowed.

Power Sources

The need for additional electric power is recognized. The agency decision is to allow power of 138kV into a substation that would be located near the southern or eastern edge of the study area, as long as larger capacity powerlines to the substation avoid crossing wetland areas. Additional site-specific analysis would occur after the actual company is determined, and additional measures may be determined at that time. Location of internal distribution lines will be determined site-specifically as well.

MANAGEMENT CONSIDERATIONS

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The alternative which would result in the least degree of adverse impact to the biological and physical environment, consistent with Title I of the National Environmental Policy Act (NEPA), is the No Action Alternative.

The Agency Preferred Alternative would result in acceptable mitigated adverse impacts to the

biological and physical environment and would fulfill the purpose and need for the Proposed Action. It would produce oil and gas resources, private additional revenues from oil and gas, and result in beneficial impacts to the local economy. The interrelationship of the effects to the biological and physical environment with the social and economic resources constitutes the effect on the human environment as defined by the Council on Environmental Quality's NEPA regulations (40 CFR 1508.14).

ALTERNATIVES CONSIDERED

PROPOSED ACTION (Oil and Gas Companies Proposals)

Full field development, as proposed by the companies would include the drilling of up to 56 new production wells and up to 14 pressure maintenance gas injection wells. Production well spacing would be about one well per square mile for most of the area, except within and adjacent to the Luckey Ditch Unit. Here, since oil has been found in substantial quantities, 2 wells per square mile were proposed. (The production and pressure maintenance well portion of the Proposed Action is also part of the Agency Preferred Alternative and the Agency Decision.)

Proposed collector roads would include the existing collector system, upgraded as needed, with the addition of two loops, or connectors within the system. The following roads would be added to the collector system:

From existing Sun well #2 to existing Sun well #1, this road would cross the Henrys Fork River to provide access to the Luckey Ditch Unit from the east. This route would be located on private and state surface, and not cross public or National Forest lands. This portion of the Proposed Action would reduce mileage and traffic of Sun vehicles presently required to access the unit from the southwest. An exclusive easement from the private landowner to Sun would preclude the general public's use of most of this road. There would be 1 1/4 miles of new construction and a river crossing needed for 8 acres of disturbance. (Construction of this river crossing on private surface has begun.)

The second proposed collector loop would have been between Sage Creek road and the access road to Texaco #1-32 well. This road addition would enable through traffic throughout the Whiskey Springs Unit. There would be 1 1/2 miles of new collector road required with 12 acres of disturbance. (This portion of the Proposed Action has been selected as part of the Agency Preferred Alternative and Agency Decision.)

The third proposed addition to the collector system would be from Anadarko #A-1 well to Diamond Shamrock wells in the Taylor Ranch Unit. This road would enable through

traffic from the Taylor Ranch Unit to the nonunit area. There would be 1/2 mile of new collector road construction, creating 6 acres of new disturbance.

Local roads were proposed to access each well. Approximately 37 miles of local road would be required to access the 70 wells. These local well access roads would be gated if within the National Forest boundary. A Forest Supervisor's Closure of this area would preclude general public vehicle travel within the area except on designated roadways. (The local roads within the Proposed Action are also part of the Agency Decision with the exception that no roads would be authorized to cross Sage Creek or Little Sage Creek.)

Proposed production facilities would be located at the well pad (Anadarko, American Quasar, Conoco, and GAE), or at mini facilities (Texaco, Sun, Diamond Shamrock). Within the Whiskey Springs Unit, 2 Texaco mini facilities would be constructed. Within the Taylor Ranch Unit, 4 Diamond Shamrock mini facilities would be constructed. Sun would use an existing mini production plant within the state section inside Luckey Ditch Unit, and construct an additional small facility on the southwest side of the river.

Processing of wet gas produced within the study area has been proposed to occur at the existing Phillips processing plant located 3 miles south of the study area in Utah. The Phillips proposal would include processing of a portion or of all the produced wet gas within the field, capacity of the plant would be increased to necessary size by addition of prefabricated processing modules trucked to the plant site. The Phillips proposal would create new disturbance of 2 acres. (The Phillips portion of the Proposed Action is also part of the Agency Preferred Alternative.) Sun has withdrawn their proposal to process gas in a 65-acre facility on federal lands. A site on private land within the study area would be used instead.

Product Transport under the Proposed Action would include piping of gases and trucking of oil/condensate/natural gas liquids, until economically feasible to pipe these liquids. Until such time as a company would determine economic feasibility, as many as 60 truck trips per day would be needed to remove liquid hydrocarbons.

Power would be provided to the area from one of two companies currently competing for the opportunity to upgrade electrical power to the area. After the Wyoming Public Service Com-

ALTERNATIVES CONSIDERED

mission determines which company (Bridger Valley Electric or Utah Power and Light Co.) would provide power, the 138kV line would enter the study area to access a new substation proposed to be located within the Luckey Ditch Unit. From the substation, elevated electric lines were proposed to provide power to production and processing facilities within the field, and to the existing Phillips plant adjacent to the field. (Power sources are provided for as proposed, in the Agency Decision.)

COMPONENT ALTERNATIVES TO THE PROPOSED ACTION

Collector Road Alternatives

Several alternatives to collector access were analyzed by the agencies. The proposed collector system is described in the Proposed Action. Component alternatives to the Proposed Action are described below:

Existing Collectors Only (1)

This alternative would use existing collector roads only, without the addition of the company-proposed collectors except as absolutely necessary to access all proposed wells and facilities. The Sun loop road from east Luckey Ditch to west Luckey Ditch, and the Taylor Ranch Unit to nonunit loop road would not be constructed, reducing the required disturbance by 14 acres.

Taylor Ranch to Whiskey Springs Tie (2)

This alternative would add 0.75 miles of new collector road between Anadarko #B-1 well and the access road to Diamond Shamrock #32-34 well. This would allow through traffic from Taylor Ranch Unit to Luckey Ditch Unit. An additional 5 acres would be disturbed.

Whiskey Springs North Access (3)

This alternative would add 1.9 miles of new collector between Forest Road 72 and Texaco #13 well. This would allow through traffic from Forest Road 72 to the Whiskey Springs Unit and 12 acres additional disturbance would be necessary.

(None of the previous collector road alternatives were selected in their entirety in the Agency Preferred Alternative, or the Agency Decision. However, collector road alternative (1) is a part of the Agency Decision.)

Production and Processing Plant Alternatives

A number of possible alternatives to proposed gas plant sites exist. The proposed plant sites are described as part of the Proposed Action. The component alternatives to the Proposed Action are listed below. Alternatives described for the Luckey Ditch Unit cover potential sites for location of Sun's 65 acre processing plant on National Forest or public land.

Luckey Ditch Unit (1) and (2)

These alternative processing plant site locations would be on the southeast side of Henrys Fork on public lands. A wet gas trunkline would cross, and a dry gas trunkline would recross the Henrys Fork. Either of these alternatives would site the 65 acre plant on a bench within 1 mile of the river.

Whiskey Springs Unit (3) and Taylor Ranch Unit (4)

These Alternatives to reduce the number of centralized production facilities and provide for manifolds have been selected as part of the Agency Preferred Alternative and Agency Decision.

Luckey Ditch Unit (5)

This site, proposed in the draft EIS, at Sec. 18, T. 12 N., R. 114 W., would place the processing plant on the west side of the Henrys Fork, close to most producing wells. Slightly fewer miles of road and pipeline (approximately 2.5 miles) would be required than with the Alternatives (1) and (2). (This alternative has been selected as part of the Agency Decision.)

Product Transport Alternative

The product transport alternative for use of pipelines rather than trucking has been selected as part of the Agency Preferred Alternative and Agency Decision.

ALTERNATIVES CONSIDERED

NO ACTION

There are 16 wells currently authorized, drilling, or producing in the study area. The No Action alternative would deny the drilling of additional wells on National Forest, or public lands. No in-field processing plants would be authorized, other than those already existing at individual well sites, or that would be constructed on state or private land. Pipelines to allow production from existing wells would continue but no additional pipelines would be constructed. Approximately 38 acres of new disturbance to public or National Forest land is anticipated. Additional disturbance would occur on state and private lands.

All oil and gas leases contained within the study area grant the right and privilege to drill for, mine, extract, remove, and dispose of all the oil and gas deposits (except helium in the leased lands) subject to the terms and conditions incorporated in the lease.

The subject leases contain specific stipulations indicating that before approving any surface-disturbing activity, the Department of Interior may impose "such reasonable conditions, not inconsistent with the purpose for which... [the] lease is issued, as the... [BLM] may require to protect the surface of the lease lands and environment." Generally, the specific stipulations contained in the leases apply topographical or seasonal restrictions to subject leases. None of these stipulations would enable the Secretary of the Interior to deny all drilling activity because of environmental concerns.

Since the Secretary of the Interior has no authority to deny all activity upon the lease except as described above, denial of proposed drilling could constitute a taking of express rights for which compensation to the companies would be required. Compensation such as exchange,

condemnation, or buy back of subject leases would require Congressional action.

The Secretary could only suspend the leases that have not been previously drilled pursuant to Section 39 of the Mineral Leasing Act, pending consideration by Congress of a grant of authority to preclude drilling on these leases, or preclude further drilling on leases with established production.

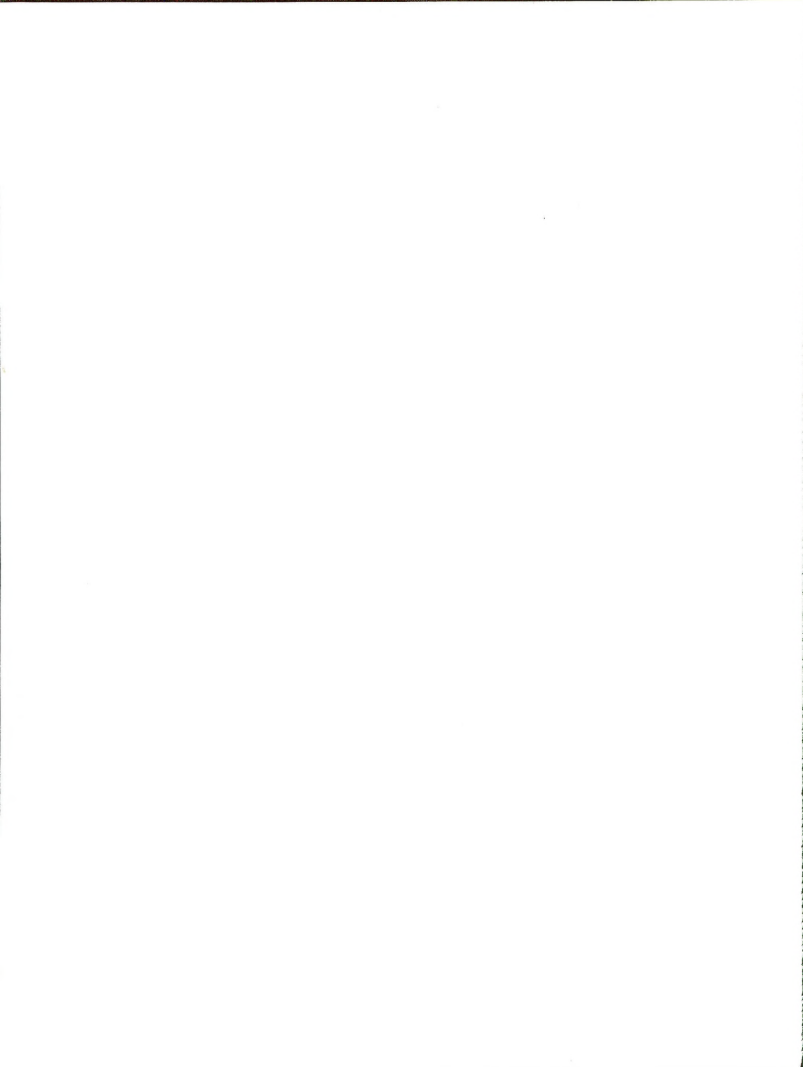
This aspect of the "no action" alternative has been considered but discarded, since Congress has given no indication to the agencies involved that it is considering action of the matter. The prospect of securing passage of such legislation and appropriation of funds for that purpose is remote; the geologic inferences are such that the cost would be high, and litigation of values would be required.

Proposals outside the authority of BLM and FS cannot be regulated by the BLM or FS, e.g., private or state surface lands.

Alternatives Not Further Considered

Regulated Timing of Development

A plan for federally regulated scheduling of company starts within certain areas over the next few years was removed from further consideration because potential adverse impacts to resources can be mitigated through the use of seasonal restrictions, making an alternative that regulates the timing of development unnecessary. With mitigation applied in both cases, the impacts from this alternative would not be appreciably different than those anticipated from the Proposed Action.

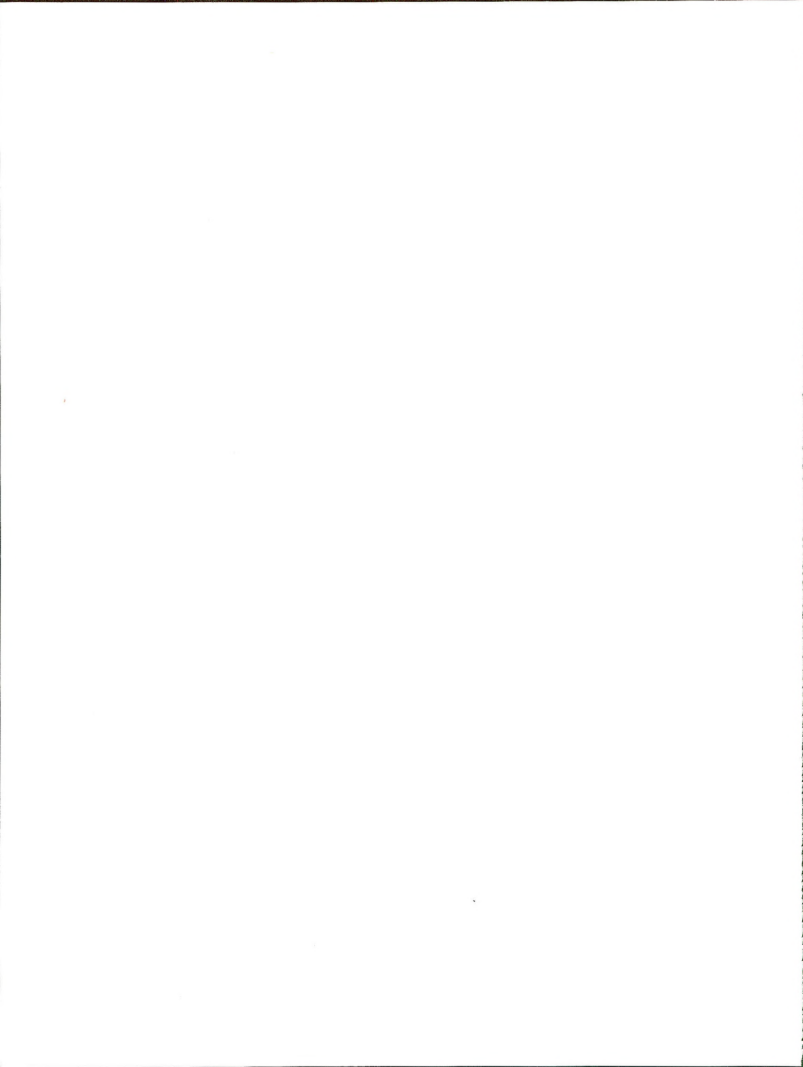


MITIGATION

The mitigation measures included in this record of decision (ROD) are specific requirements with which the applicants will have to comply. These requirements will be included, as appropriate, in the applicants' right-of-way grants, approved APDs, and other permits. The BLM and FS have committed to these measures and are responsible for their enforcement. In the event of a delay in project implementation, mitigation measures will be reviewed by the agencies at the time of grant development to ensure their applicability and to ensure that all appropriate and necessary

mitigation measures are applied as stipulations. This will prevent impacts from exceeding the worst-case analyzed and mitigated in the EIS. Implementation of stipulations will be in a timely manner based on the applicants schedule of development activities.

The mitigation measures are listed in Appendix B of the final EIS, and are organized by general measures, resource measures, and reclamation plans.



MONITORING

INTERAGENCY IMPLEMENTATION TASK FORCE

The purposes and objectives of the Task Force are to:

Ensure the project is carried out in conformance with applicable laws, regulations, and specific measures addressed in the EIS.

Provide methodology and responsibility for addressing changes that may occur over the life of the project.

The Task Force will:

Ensure BLM/FS/Wyoming Game and Fish Department (WGFD)/Utah Division of Wildlife Resource (UDWR) representation, at Authorized Officer levels.

Act as a coordination/oversight committee.

Ensure uniformity of development on various administrative units.

COMPLIANCE PERSONNEL

On-the-ground company and agency personnel will provide day-to-day assurance of application of proper procedures and mitigation measures, and report to the appropriate Authorized Officer as necessary.

ANNUAL REPORTS

Annual reports will be prepared during the years of initial field development, and as long afterward as deemed necessary by the Task Force, presenting:

Resource monitoring data and conclusions.

Actual development scenarios and effects.

Recommendations for future operations/changes.

This report will be prepared by November 1 of each year.

INCIDENT CONTROL

Specific authority for repair of incidents that are sudden in nature or become evident from resource monitoring studies or annual reports is generally held by the agency or authority that issues a permit. The authorizing officer (AO) has the authority to require measures that would correct problems that may occur on federal lands in the field. State agencies would generally provide control over incidents that may occur on state lands, and those occurring on private land that may affect water or air quality, or other resources.

The Task Force will aid in determination and correction of project incidents, which may include measures such as requiring cessation of operations until remedies to problems have been applied. Other measures may be necessary such as shutdowns of single or multiple facilities, closure of roads, relocating structures, removing structures, or additional reclamation measures.

RESOURCE MONITORING

Resource monitoring would occur as described in Chapter 4 of the Final EIS. Resources to be monitored include: wildlife, watershed, soils, and range vegetation.



CONSULTATION AND COORDINATION

In the spring of 1985, it was apparent that there was sufficient activity in the Hickey Mountain - Table Mountain areas to warrant a systematic cumulative analysis of field development. The operators in the affected area were contacted in an effort to determine their development plans. At that time the "field" was not adequately defined, so allowances were made for the companies to drill additional wells to help delineate the field. The private landowners and grazing permittees in the area were also contacted.

SCOPING

On October 18, 1985, a Scoping Statement was distributed to the public to solicit public comment on oil and gas development in the Hickey Mountain - Table Mountain areas. The letter accompanying the Scoping Statement requested comments by November 18, 1985. Approximately 60 copies of the Scoping Statement were distributed. A notice that an environmental assessment was being prepared and that the Scoping Statement was available for comment was published in the *Federal Register* on October 21, 1985. The scoping statement also indicated that, based on the environmental analysis, the federal agencies may determine that an environmental impact statement (EIS) was required. There were 22 responses to the Scoping Statement.

Several coordination meetings were held with the Wyoming Game and Fish Department and the Utah Division of Wildlife Resources. Because the potential impacts to wildlife were an issue which needed to be analyzed in detail, additional data were needed to adequately analyze the impacts to wildlife. A Wildlife Data Needs Analysis was prepared. The Forest Service (FS), Bureau of Land Management (BLM), and the state agencies met with the companies. Based on the data needs analysis, the companies agreed to provide the state agencies with contributed funds to acquire the needed data.

Several inquiries from Congressional representatives have been received since this environmental analysis began. BLM and FS representatives have also met with representatives of state and local governments.

Numerous meetings were held between the FS, BLM, and the companies to develop the actions to a point where they could be analyzed in this environmental document. The Bridger Valley Electric Association and local communities were represented at some of these meetings. In addition, there has been frequent written correspondence with the applicants.

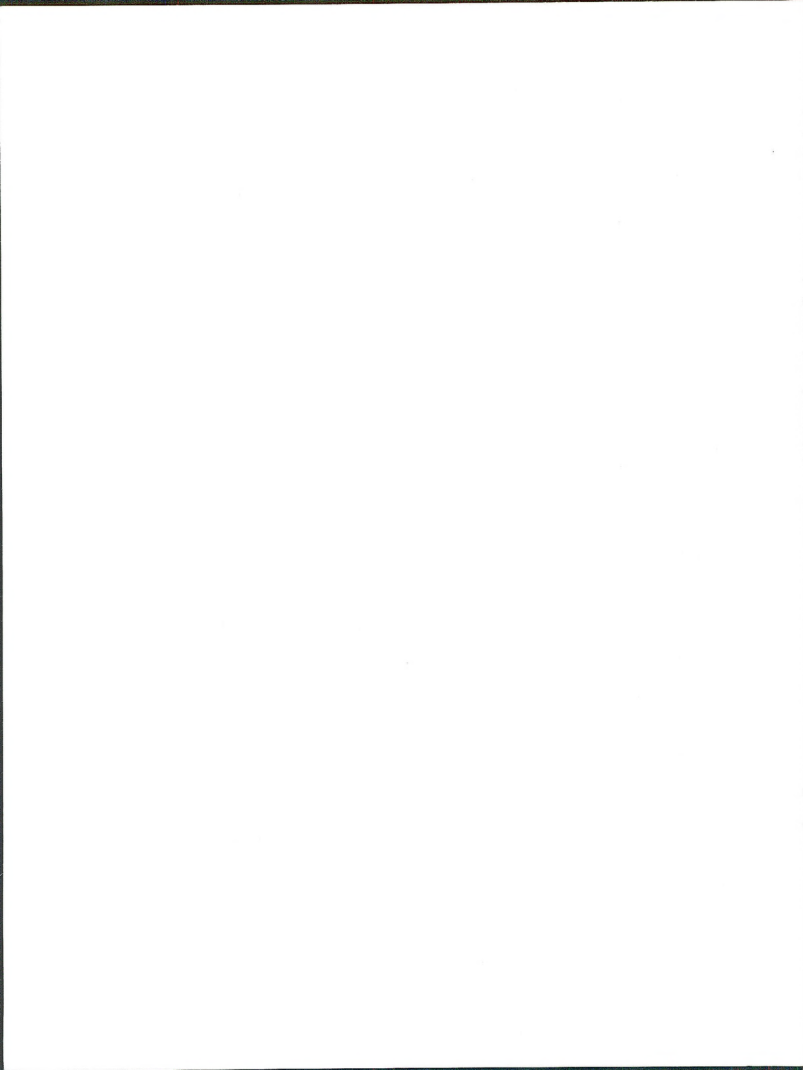
A Notice of Intent to Prepare an EIS was published in the *Federal Register* on October 6, 1986. News releases announcing availability of the draft EIS and requesting public comment were provided to local media.

DRAFT EIS CONSULTATION AND COORDINATION

The Draft EIS was published in January 1987, and filed with EPA on January 16, 1987. Thirty-three comment letters were received during the 45-day comment period. Copies of these letters and the accompanying responses are shown in Appendix E of the Final EIS.

FINAL EIS

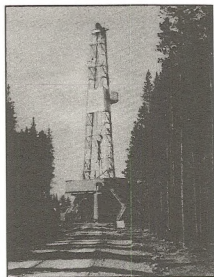
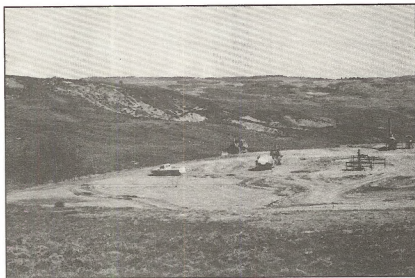
The Final EIS is being issued at the same time as this record of decision, and is bound with this document. A concurrent review period of 30 days is allowed on both the Final EIS and the ROD. At the end of this 30-day period, if no significant adverse comments requiring amendment of the decision are received, individual actions allowed by this ROD will be approved (provided all preauthorization requirements are met).



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Hickey Mountain - Table Mountain

Oil and Gas Field Development
Final EIS



Department of the Interior
Bureau of Land Management
Department of Agriculture
Forest Service

May 1987

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Hickey Mountain - Table Mountain Oil and Gas Field Development Environmental Impact Statement (EIS)

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(X) FINAL

Joint Lead Agencies: U.S. Department of the Interior
Bureau of Land Management
U.S. Department of Agriculture
Forest Service

Counties That Could Be Directly Affected: Uinta County, Wyoming
Summit County, Utah

Abstract: Sun Exploration and Production Company, Phillips 66, American Quasar Petroleum Company, Texaco Inc., Diamond Shamrock Exploration Company, Conoco Inc., General Atlantic Energy, Anadarko Petroleum Company, and Mountain Fuel Resources Company propose to develop, produce, treat, and transport natural sweet gas and oil from a new deep oil and gas field in southwestern Wyoming and west-central Utah. This final Environmental Impact Statement analyzes the environmental effects of the proposed well field development including the construction, use, and abandonment of hydrocarbon processing facilities and gas processing facilities along with road building, well drilling, product transport, and power sources. The impacts of the Proposed Action, and those of component alternatives for collector access roads, plant sites, and hydrocarbon transport are analyzed along with an agency Preferred Alternative and the No Action alternative. Based on the issues and concerns identified during the scoping process, the EIS focuses on the impacts to wildlife, sensitive soils, watershed, visual resources, and transportation systems. The cumulative impacts of well field development in an area with existing impacts from high road densities, timber management, recreational pressures, and a mountain pine beetle epidemic are analyzed. In addition to proposals for uses of federal lands, some field project components would be located on private or state lands within the study area.

The BLM and FS have jointly identified the Agency Preferred Alternative to be a combination of the Proposed Action (production and pressure maintenance wells, one new collector road loop, production and processing facilities, and power sources) and of component alternatives (existing collector roads only, and piping of all hydrocarbons).

EIS Contact:

Wyoming State Director (931)
Bureau of Land Management
Wyoming State Office
P.O. Box 1828
Cheyenne, Wyoming 82003

Date EIS made available to EPA and the Public

Draft: January 16, 1987

Final: May 29, 1987

FINAL
ENVIRONMENTAL IMPACT STATEMENT
for
HICKEY MOUNTAIN - TABLE MOUNTAIN
OIL AND GAS FIELD
DEVELOPMENT PROJECT

Prepared By:

U.S. Department of the Interior
Bureau of Land Management

U.S. Department of Agriculture
Forest Service

1987

 May 13, 1987

Wyoming State Director
Bureau of Land Management
Date

 May 13, 1987

Utah State Director
Bureau of Land Management
Date

 May 13, 1987

Forest Supervisor, Wasatch-Cache National Forest
Forest Service
Date



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SUMMARY

The Hickey Mountain - Table Mountain Environmental Impact Statement (EIS) has been prepared to assist the Bureau of Land Management (BLM) and the Forest Service in making decisions regarding proposed oil and gas field development by nine companies in the Hickey Mountain - Table Mountain area of Uinta County, in southwestern Wyoming. Following completion of the EIS and the Record of Decision, plans of development submitted by the companies would be approved, approved as modified, or disapproved.

Several changes have been made to this document since its issue as a draft. Phillips Petroleum Company has proposed to upgrade its existing hydrocarbon processing plant facilities adjacent to the study area, the Bridger Lake Field in Utah, to provide processing for gases produced in the original analysis area. Also in Utah, Sun Exploration and Production Company has proposed 3 new wells in the Flash Unit, adjacent to the original analysis area. These changes have brought additional administrative concerns and authorities into the process. Within the study area, three additional wells have been drilled. Approval for these wells was based on two environmental assessments (WY-045-EA7-9 and WY-045-EA7-11), and was considered due to drainage problems and associated legal constraints. This drilling has led to additional changes in the Proposed Action, including an increase in well density (greater than 1 well/sq. mile) in promising locations within the Luckey Ditch Unit, and decreased emphasis in drilling within and adjacent to the Taylor Ranch Unit. Sun has withdrawn their proposal for constructing a processing plant on federal lands; built a mini-production plant on state of Wyoming lands; proposed a second mini-production plant for south of Henrys Fork River and a third production plant to the west; and begun construction of a river crossing and loop road on private and state lands.

Discussed briefly in this final document are pipeline routes leading out of the field, and powerline routes leading in. Additional analysis for these proposals would be necessary, outside the scope of this EIS.

The study area, 45,510 acres, now contains 16 existing exploratory wells. This EIS was undertaken to analyze the potential cumulative impacts that would result from full field development.

Full field development is defined as those activities, which would allow determination of, and production of, the hydrocarbon resources within the study area. At any period in time, full field development may expand or contract due to economic considerations and determination of hydrocarbon availability to date. For example, the market and price for the hydrocarbon products will determine the economic feasibility of drilling additional wells. The relative success of these additional wells (the quantities and types of hydrocarbons found or not found) may change field development scenarios as well. Based on these types of changes to company plans within the last year, the reader of this EIS is advised:

1. Where companies have already explored the resource within a unit and subsequently changed production plans to be more intensive, these upgraded plans are analyzed.
2. Where companies have reduced plans due mainly to the market price of the product, without substantial additional drilling, original plans are still analyzed. Maximum field development is not feasible based on today's market. Tomorrow's prices and additional drilling may upgrade plans again. The assumption is made that if the product could be found and marketed for a profit, that the original proposed activities would be needed to produce it.

PROPOSED ACTION AND ALTERNATIVES

The Proposed Action for development of the field of sweet gas consists of: well locations; access roads; hydrocarbon production, processing, and storage (including wastewater disposal); product transportation; and power sources.

Sun Exploration and Production Company, Texaco Inc., Anadarko Petroleum Company, American Quasar Petroleum Company, Diamond Shamrock Exploration Company, Conoco Inc., General Atlantic Energy, Mountain Fuel Resources Company, and Phillips Petroleum Company are the proponents of the field development action. Between these 9 companies: 56 new oil and gas wells, 14 repressurization

SUMMARY

wells, 1 wastewater injection well, 62.2 miles of road, 58.6 miles of pipeline, 19 miles of electric powerline, and 1 electric power substation are proposed to be constructed with maximum development. In addition, hydrocarbon production and processing facilities would be required: at well sites, mini-plants (5 to 10 acres each), or larger plant sites.

With maximum proposed development there would be approximately one well in every square mile, except within and adjacent to Luckey Ditch Unit where 2 wells per square mile are proposed.

Alternatives to various components of the Proposed Action were developed to allow for selection of alternatives to specific components of the Proposed Action. These include 3 collector access road alternatives which would decrease or increase the opportunity for loop roads. Several hydrocarbon processing plant site alternatives were analyzed which would: provide locations for a processing plant in the Luckey Ditch Unit on federal lands; or centralize processing in Whiskey Springs and Taylor Ranch Units, creating a need for manifold facilities; or use the existing facilities in the Bridger Lake Field in Utah. The product transport alternative would mandate the use of pipelines for all product transport affecting big game seasonal ranges. An agency Preferred Alternative and the No Action alternative are also addressed.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Issues analyzed include potential effects of the Proposed Action and alternatives on: wildlife, soils, watershed, visual resources, transportation systems, vegetation, recreation, timber management and livestock grazing, fisheries, social and economic environments, cultural resources, paleontological resources, air quality, health and safety, and geology.

The analysis found that some issues were of greater consequence than others. The bulk of the analysis focuses on wildlife, soils, watershed, visual resources, and transportation. Maximum field development, as defined and analyzed in this document, would have the greatest cumulative impact. Maximum field development, however, may not be realized. Initial areas of development that are currently foreseen, were included in the analysis.

Impacts identified and analyzed in this EIS are expected to initially occur in and around the Luckey Ditch Unit. Impacts would occur on outlying areas when and if discoveries and development expand from initial development areas.

Wildlife impacts for full field development under all alternatives would be greatest to elk that use the study area for calving and wintering. The area of initial impact contains elk calving range and winter range. Other impacts to wildlife would involve development activities in moose and mule deer winter and crucial winter ranges. Moose crucial winter range would be disturbed during initial development. Field development would disturb big game animals already impacted by recreational and oil and gas traffic on roads within the study area, and by hunting and timber harvest activities. Mitigation measures, such as seasonal restrictions, would be applied to field development activities to limit potential impacts.

The Hickey Mountain - Table Mountain area is characterized by historic and existing landslide activities. Landslide hazards exist within much of the area. Other soil issues involve salinity, rapid permeability, and high erosivity. Much of the development would affect these sensitive soils. Construction practices would be strictly regulated to mitigate disturbances to fragile soils or those posing difficulties to rehabilitation.

The watershed is characterized by perennial and intermittent streams that drain into the Upper Green River and thence the Colorado River system. Salinity and sediments from this area are easily dislodged from soils during construction activities and introduced into this river system. The Bishop Conglomerate is a highly permeable subsurface formation which occurs with great frequency within the study area. The numerous fresh water springs in the area occur in this conglomerate. Problems causing limited sedimentation and petroleum introduction to waters have occurred in the past. Additional field development would increase this operational risk.

Visual resources are characterized differently by the FS and by the BLM. The Forest Service visual resources are referred to as Visual Quality Objectives, of which there are two levels present within the study area, Modification and Partial Retention. The BLM characterizes visual resources as Visual Resource Management Classes of which two levels, III and IV are present within the study area. Field development, including roads, wells, and processing plants, would create a human-influenced setting, replacing the moderately natural visual surroundings that presently exist.

SUMMARY

The National Forest portion of the study area contains various types of roads including primitive two-tracks and upgraded roads. The number of miles of roads place the area at the high end of approved road density standards prescribed in the Wasatch-Cache National Forest Land and Resource Management Plan (1985). Authorization of new roads would force the closure of existing primitive roads, and the gating of new roads to preclude recreational traffic, in order to meet density standards. Public access into the National Forest portion of the area is now readily available. Because of surrounding private lands, roaded access to BLM-administered public lands in the study area is not readily available nor would the situation improve with field development.

Other resources of interest in the study area include fisheries, known occurrence of vertebrate fossils, and above average frequency of cultural resources.

MITIGATION MEASURES

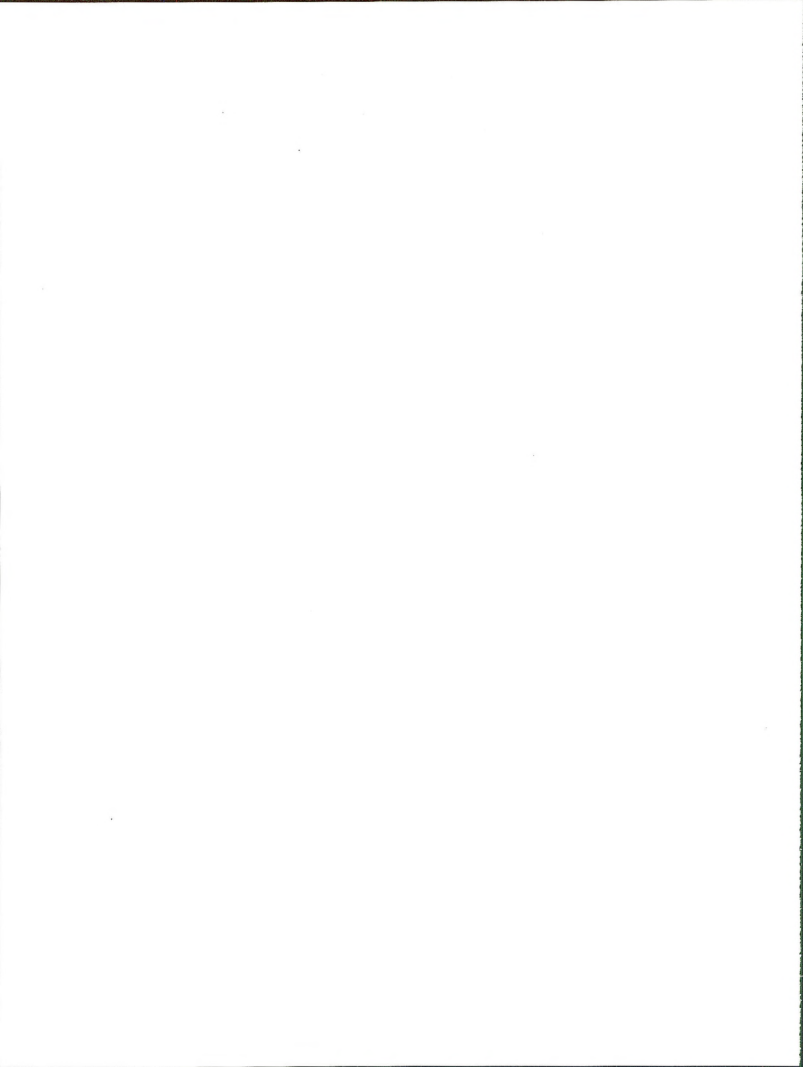
Recommended mitigation measures to alleviate identified impacts have been identified.

ENVIRONMENTAL ANALYSIS CONSIDERATIONS

Changes in company economic situations, new production information, and other considerations have caused proposals to vary during the preparation of this environmental analysis. This EIS analyzes a maximum development scenario, to cover the variety of development activity levels proposed.

The environmental analysis contained in this document was provided through a coordinated effort among professional resource specialists from BLM, FS, and Wyoming Game and Fish Department.

A Geographic Information System (GIS) was also used. The analytical and graphic capabilities of BLM's GIS provided the quantified information found in the text as well as the basis for document maps.



CHAPTER 1

INTRODUCTION

Sun Exploration and Production Company, Texaco Inc., Diamond Shamrock Exploration Company, Anadarko Petroleum Company, Conoco Inc., American Quasar Petroleum Company, and General Atlantic Energy propose to develop, produce, process, and transport natural gas (sweet gas), condensate, and oil from an area in southeastern Uinta County, Wyoming. Mountain Fuel Resources proposes to purchase, store, and transport natural gas produced within the Hickey Mountain-Table Mountain project area. Phillips Petroleum Company proposes to process and transport natural gas produced within the field. To undertake these activities, each company will be required to obtain authorizations to occupy and utilize public lands managed by the Bureau of Land Management (BLM) and the Forest Service (FS).

The project study area is located in southwestern Wyoming (Map 1-1). It is comprised of 45,510 acres, of which 37 percent is administered by the FS, 35.6 percent is administered by the BLM, 1.4 percent is state of Wyoming land, and 26 percent is private land (Map 1-2). Approximately 90 percent of the minerals are administered by the BLM; the remainder are state and private.

There are 16 existing wells within the study area capable of production. This draft environmental impact statement (EIS) analyzes the maximum number of new wells (56 production wells, 14 injection wells) for maximum field development as proposed by the companies. This document contains the analysis of 3 new wells proposed to be drilled adjacent to the study area, in Utah, and the upgrade of an existing gas processing facility (Phillips Bridger Lake Plant) also in Utah. Because of the interaction of these new items with the activities within the study area, cumulative impacts are addressed, although the study area itself has not been enlarged.

The companies were requested to provide plans of development for the four oil and gas units and associated nonunit area, based on maximum potential development. Initial development would be centered in, and close to the Luckey Ditch Unit (within 1 to 2 miles outside the unit, see Map 1-2). Further development would aid in defining area subsurface geology and potential hydrocarbon reserves, and enable drilling to move to areas

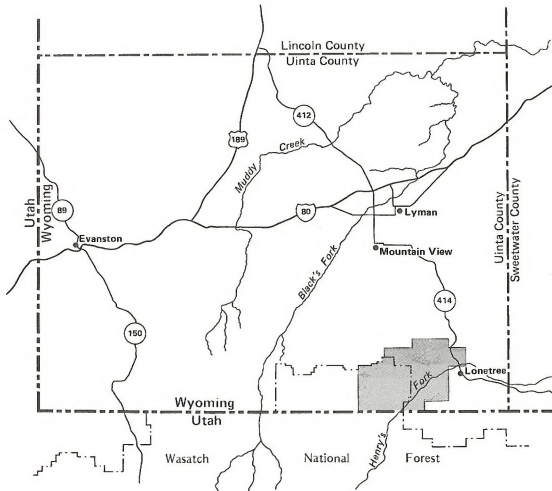
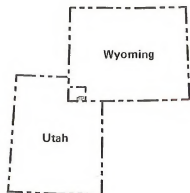
beyond initial development. Geologic understanding of this area will be a continual, ongoing process. Economic and discovery considerations influencing production of hydrocarbons will change. Should petroleum resources be found beneath the area in sufficient quantity, these plans of development illustrate what types of development would be required to produce the resource.


Oil and gas activity is not new to the area. Besides the 16 existing wells, Phillips Petroleum Company has operated a multi-well oil field and oil and gas processing plant 3 miles south of the study area, in Utah, since the mid-1960s. Oil and gas development in southeast Uinta County began with Forest Oil Company's Henry Unit Well No. 1, completed October 7, 1980, and producing 111 barrels a day of marketable retrograde condensate. A few years after this discovery, the Henry, South Henry, Luckey Ditch, Reed, and Taylor Ranch Units were approved.

The completion of Sun's Luckey Ditch No. 1 well on May 25, 1985, generated most of the recent interest. Its initial production was 887 barrels of condensate a day and 7.5 million cubic feet of gas per day (MMCFGPD). The possibility existed that one continuous field was present for 14 miles along the Moxa Arch structure. This possibility generated the filing of 14 Applications for Permit to Drill (APDs) by 8 operators. BLM determined that 10 delineation wells should be permitted in the summer of 1985, prior to completion of the EIS, to further define the actual extent of the field, and assist in definition of proposals that would be analyzed in the EIS. The EIS is also intended to analyze the cumulative impacts of field development.

PURPOSE OF AND NEED FOR THE ACTION

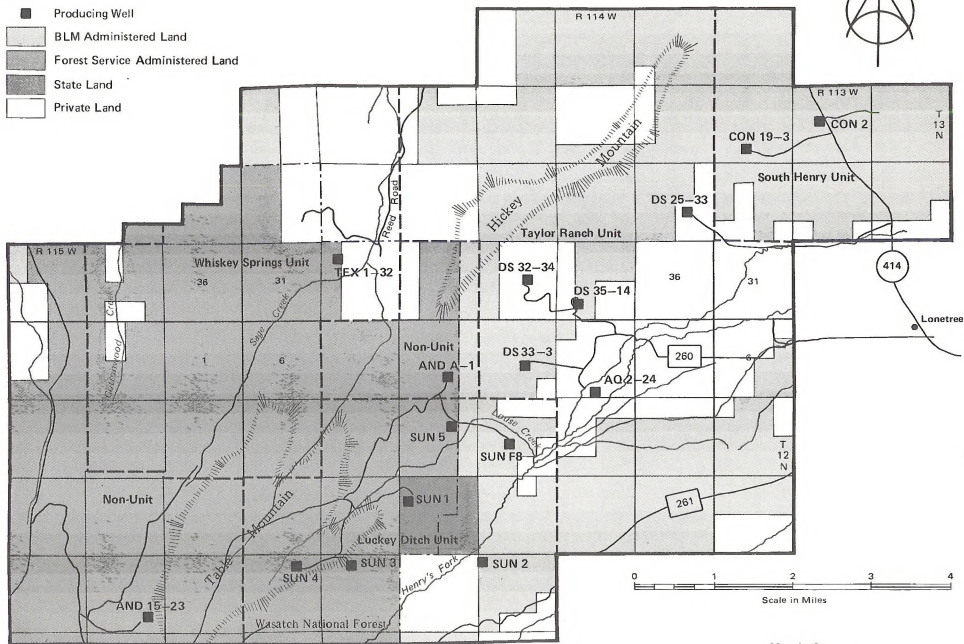
The purpose of and need for this project is to exercise the leaseholders' rights to drill for, extract, remove, and dispose of all the oil and gas (except helium) in the lands described. Included is the right to build and maintain necessary improvements, subject to renewal or extension of the lease in accordance with the appropriate



 Hickey Mountain-Table Mountain Study Area

Map 1-1
Vicinity of Hickey Mountain-Table Mountain EIS

- Study Area Boundary
- - - Unit Boundary
- Producing Well
- BLM Administered Land
- Forest Service Administered Land
- State Land
- Private Land



Map 1-2
Surface Ownership

INTRODUCTION

authority. The primary term of the lease may be for 5 or 10 years; once production is established, the lease is held as long as the lease or unit is productive.

Oil and gas leases contain specific stipulations governing development activities. Appendix A lists applicable lease stipulations.

Oil and gas development in this area is in conformance with the Wasatch-Cache National Forest Land and Resource Management Plan (1985); the Bureau of Land Management Kemmerer Resource Management Plan (1986), Salt Wells Management Framework Plan (1982), and the Big Sandy/Salt Wells Oil and Gas Environmental Assessment (1981).

AUTHORIZING ACTIONS

Overview

The federal, state, county, and local actions required to implement the applicants' proposed projects would generally be the same regardless of the type of project or its location. These actions are listed in Table 1-1.

As part of the process of issuing the various required authorizations, the agencies require compliance with standard procedures or requirements to mitigate potential impacts. Since these procedures would be required regardless of the designs of the proposed projects, they were considered in the analysis of the impacts. These standard procedures would be required for maximum field development or for single activities. Each is designed to minimize impacts from any single development activity.

Prior to the issuance of specific permits to the applicants, requirements beyond those covered by the EIS must be met. Examples of such permits would be permits to drill, sundry notices, rights-of-way grants, and Special Use Permits.

Application for a Permit to Drill and Sundry Notices

APDs and Sundry Notices (SNs), which are issued by the BLM, would utilize this EIS as part

of the decision-making process. The process described below illustrates how APDs would be handled after the EIS is completed and Record of Decision is signed.

Most APDs will be processed using an environmental reference report and decision notice as described in Appendix B. The EIS and the Record of Decision will provide guidance for siting of well pads and access roads, and mitigation for various resource conflicts.

When a leaseholder is prepared to drill an oil or gas well, or injection wells on a federal petroleum lease, whether it is on public lands or National Forest lands, the operator files an APD with the BLM. The BLM, and FS if appropriate, review the proposal (Surface Use Plan and Drilling Plan, which protect the surface environment and subsurface environment) and schedule an onsite field inspection with the operator, excavation contractor, and any other interested parties. Agency personnel at the onsite inspection would determine appropriate mitigation needed for each proposed well and access road by referring to this area-wide EIS and the Record of Decision mitigation sections, and determining any special site needs. These site-specific mitigating measures would be incorporated into the environmental reference report and the decision measures forwarded to the BLM Area Manager with a recommendation for approval or rejection. When concurrence is received from the District Ranger on FS surface, and any deficiencies have been corrected, the APD is approved and construction and drilling may begin.

Sundry Notice permits are required for all other development activities within an operator's unit. These include such activities as pipeline gathering systems, powerlines, communication facilities, valve guard fences, etc. Any development activity located outside the operators unit would require a right-of-way (ROW) from the surface management agency or land owner. All SNs, ROWs, and Special Use Permits would be processed using the same environmental reference report and decision notice process described for APDs.

Whenever a proposal would require an exception to a lease stipulation, the exception would be specifically considered in the environmental reference report or other analysis in the authorizing action.

INTRODUCTION

TABLE 1-1
FEDERAL, STATE, AND COUNTY AUTHORIZING ACTIONS

Agency	Nature of Action
Department of the Interior Bureau of Land Management (Rock Springs District) (Kemmerer Resource Area) (Green River Resource Area) (Salt Lake District)	Grant rights-of-way (contingent upon lease or unit boundary) on BLM surface outside unit boundaries. Issue temporary use permits Issue noncompetitive mineral materials sales contract Approval of applications for permit to drill, completions, workovers, and well repair, and hydrogen sulfide contingency plans, wastewater disposal, approval of sundry notices for pipeline gathering system, processing facilities, production facilities, powerlines, etc. Approval to flare or vent gas Approval to dispose of produced water Approval of any off-lease measurement or comingling of oil or gas production Issue antiquities permits and permits to excavate and remove archaeological or paleontological resources on public lands
U.S. Fish and Wildlife Service	Review impact on threatened or endangered species of fish, wildlife, and plants
Department of the Army U.S. Army Corps of Engineers	Issue (Section 404) Individual permit(s) for placement of dredged or fill material in waters of the United States or their adjacent wetlands
	Issue (Section 10) permit(s) for structures or work in or affecting navigable waters of the United States
Environmental Protection Agency	Issue Resource Conservation and Recovery Permit for treatment, storage, or disposal of hazardous waste
	Register generators of hazardous waste
Department of Agriculture U.S. Forest Service Wasatch-Cache National Forest	Issue special use permit for constructing rights-of-way on FS surface outside unit boundaries
	Issue antiquities permits and permit to excavate and remove archaeological resources on National Forest System Lands Issue timber sales contracts

INTRODUCTION

TABLE 1-1 (Continued)
FEDERAL, STATE, AND COUNTY AUTHORIZING ACTIONS

Agency	Nature of Action
Wyoming Department of Environmental Quality Air Quality Division	Issue air quality construction and operation permit
	Issue prevention of significant deterioration permit for generating station stack emissions
Water Quality Division	Section 401 certification for stream crossings
	Approval of sewage treatment plant (ground water pollution control permit)
	Approval of wastewater disposal
	Approval of water supply for plant personnel
	NDPES permits
Solid Waste Management Program	Industrial waste permits
Wyoming Oil and Gas Conservation Commission	Primary authority for drilling on state and privately held mineral resources
	Authority to allow or prohibit flaring or venting of gas
	Gas injection well permits
	Regulate drilling and plugging of wells
	Directional drilling
	Rules and regulations governing drilling units
	Permits to drill and blowout prevention
Wyoming State Engineer's Office	Temporary permit to use water
Wyoming State Historic Preservation Office	Cultural clearance for sites potentially eligible for inclusion on the National Register of historic places
Wyoming State Land Board	Issue easements to cross state lands
Wyoming Public Service Commission	Certificate of Public Convenience and Necessity; determine power sources
Uinta County, State of Wyoming	Encroachment Permit
	Sanitary facilities for less than 2,000 gallons/day of domestic waste
Summit County, State of Utah	Comparable county agencies and associated permits
State of Utah Agencies	Comparable state agencies and associated permits
Division of Oil and Gas Mining	Primary authority for oil and gas permits in Utah on state and private lands

CHAPTER 2

ALTERNATIVES INCLUDING THE PROPOSED ACTION

INTRODUCTION

This environmental impact statement (EIS) presents an analysis of cumulative impacts expected from full field development. Individual proposals would be analyzed site specifically and the analysis documented separately, prior to approval. See Appendix C for a description of the referencing report and decision notice method that would be used to document site selection.

Each of the nine companies involved have submitted proposed plans of development to the Bureau of Land Management (BLM) covering their respective units, leases, or proposed rights-of-way (Table 2-1). A maximum development alternative is included in the Proposed Action. Alternatives to some of the components of the Proposed Action are discussed under Component Alternatives. The Preferred Alternative and the No Action Alternative are also presented. A combination of these alternatives may be selected in the Record of Decision. Some changes to the Proposed Action and alternatives have been made since issuance of the Draft EIS and are incorporated into this chapter.

TABLE 2-1
COMPANIES BY UNIT

Company	Unit
Diamond Shamrock	Taylor Ranch
Sun	Luckey Ditch/Flash
General Atlantic Energy	South Henry
Conoco	South Henry
Texaco	Whiskey Springs
Anadarko	Nonunit area
American Quasar	Taylor Ranch/Lucky Ditch
Mountain Fuel Resources	Area wide
Phillips	Bridge Lake Field/Areawide

The Proposed Action contains the combined proposed plans of development for the companies. The Proposed Action (Maps 2-1 and 2-3) represents the maximum number of wells, access roads, pipelines, and treatment plants that would be required to fully develop the oil and gas

reservoirs based on company proposals. The rates of development for the proposal are determined by each company based on individual needs. The cumulative rate of development as illustrated by Figure 2-1 is used for analysis purposes in this EIS. The assumed spacing for most of the area is about one well per square mile (gas well spacing). A portion of the area produces a large quantity of oil and other liquids, rather than gas. Here, more dense spacing (2 wells per square mile) is proposed. If the rate of development or well spacing increases beyond this level and cumulative impacts are greater than those analyzed in this EIS, additional environmental analysis may be required. Proposals immediately surrounding the study area may be considered within the scope of this analysis if the impacts are similar and the cumulative impacts analyzed in this EIS are not exceeded.

Plans of development may be altered in response to a potential to create a pressure maintenance agreement for companies in the Taylor Ranch, Luckey Ditch, and Whiskey Springs Units. Production data from existing wells may also alter plans of development based on the estimated recoverable reserves and the economic situation. Reduced potential production will reduce potential impacts as analyzed in this EIS.

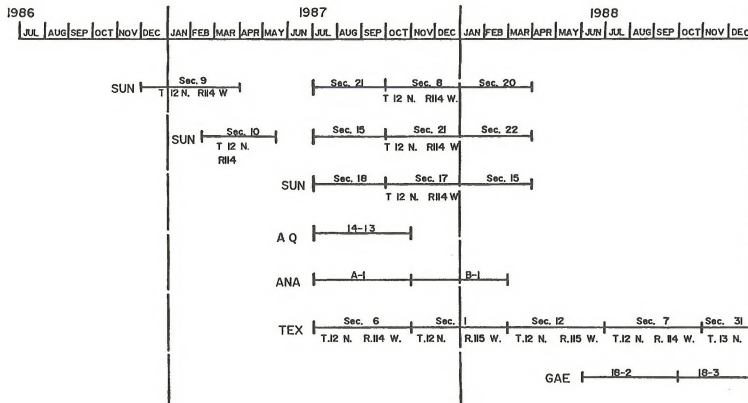
No in-field or local mancamps are proposed for this development. Construction and operation workers would probably commute from local communities, or be based temporarily in existing housing available in local communities.

DESCRIPTION OF THE PROPOSED ACTION

Well Sites

Production Wells

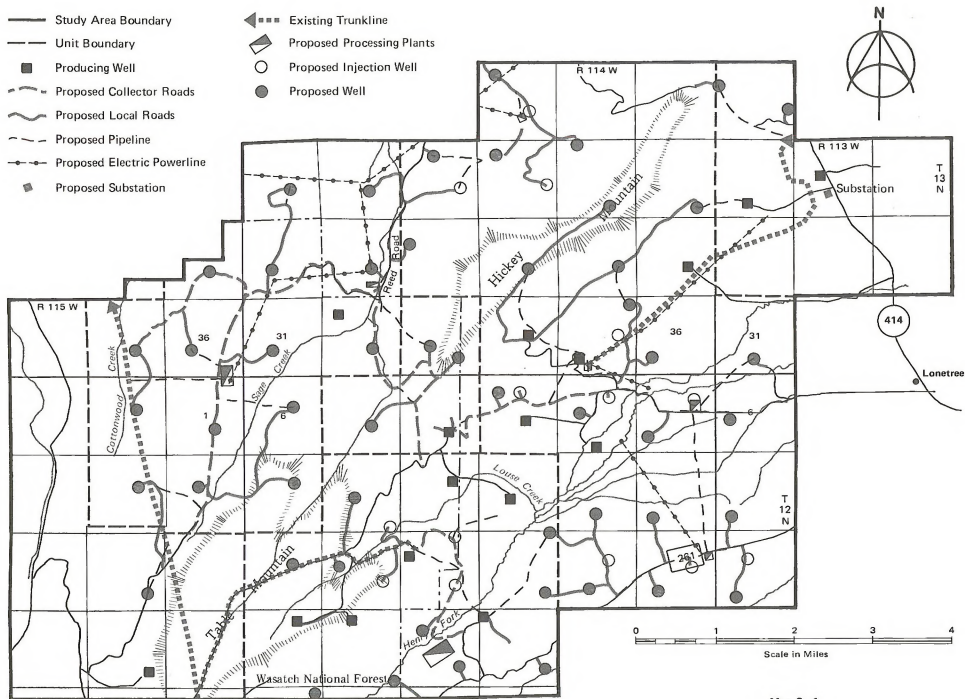
There are 56 additional production wells proposed for the field, under the maximum



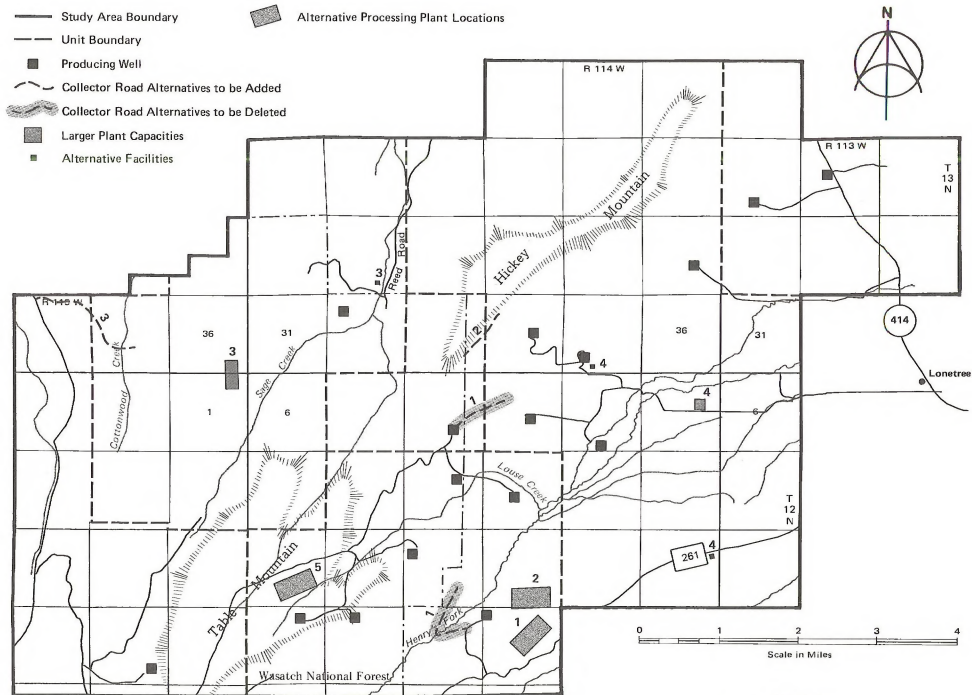
Well Number or Well Location

SUN Sun
D.S Diamond Shamrock
ANA Anadarko
TEX Texeco
AQ American Quasar
GAE General Atlantic Energy

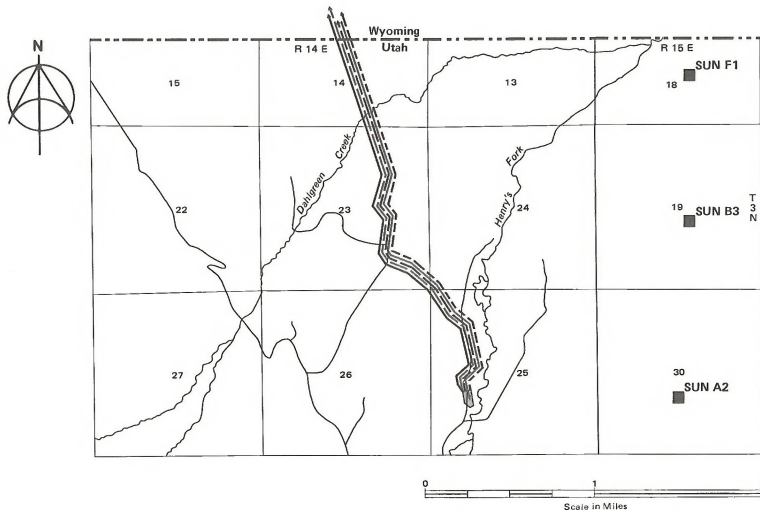
Figure 2-1
Drilling Schedule by Operators
Sheet 1 of 2










Map 2-1
 Proposed Action



Map 2-2
Component Alternatives



-  New Gas Line into Phillips Plant from Hickey-Table Sources (6")
-  New Processed Gas Line from Phillips Plant to markets-Northeast (Phillips 10")
-  Existing Oil Line (Phillips 6")
-  Existing Gas Line to markets (Mountain Fuel 10")
-  New Natural Gas Liquids Line (Phillips 6")
-  Producing Wells
-  Existing Phillips Plant

Map 2-3
Utah Components

ALTERNATIVES

development scenario: 10 in Luckey Ditch Unit, 2 in South Henry Unit, 15 in Whiskey Springs Unit, 22 in Taylor Ranch Unit, 3 in the Flash Unit (Utah), and 4 not committed to a unit. Construction of well pads would disturb about five acres each, including the area of cuts and fills.

Hydrocarbon well drilling would begin with approval of site location and pad configuration followed by staking the location for the drill pad (Figure 2-2). Flexibility is possible in the design of pad configuration to allow it to better fit site specific circumstances. Cross sectional drawings showing cut and fill areas would be required to facilitate design of the well site. The outer limits of surface disturbance would be identified through survey and slope staking. Soil analysis and site vegetation objectives would be used by the company or contractor to prepare a written site reclamation plan, using the format in Appendix C, for approval. Surface disturbance for well sites would generally be prohibited within 500 feet of surface water, within riparian areas, and on slopes in excess of 25 percent (to protect these fragile land forms), if topographically feasible. The operator's drilling program would be reviewed and approved to assure that ground water and other resources would be protected.

Pad preparation would generally involve the following earth work: constructing an access road to transport equipment to the site, stripping and stockpiling topsoil, leveling the land, and excavating a reserve pit. If permeable soils were present, the pit would be lined with suitable material such as bentonite gel, natural clay, butyl rubber, or other method as authorized. If a closed circulation system were used, a reserve pit would not be necessary.

Following well site preparation, a drill rig would be moved on location and rigged up. The drill rig would be inspected by BLM personnel. At this time, the entire location would be fenced, or in specific authorized cases, only the reserve pit would be fenced (on three sides).

The drilled well would include surface casing to prevent accidental flow. Required blowout preventers would shut off unwanted flow from the well if necessary. Drilling mud may be used to aid drilling and would be stored and recirculated from the reserve pit on the pad. Intermediate casing and production casing are added to provide additional protection to both the drill hole and subsurface formations.

Upon completion of drilling, the rig and equipment would be dismantled and removed. Drilling mud disposal would be accomplished by separating the solids from the water, and pumping off and transporting waste fluids for use or disposal elsewhere. Solidifying muds with

cement may be required if the pit has not dried by fall, and then pits would be covered with soil. The site would be cleared of equipment and reclaimed according to an approved reclamation plan (Appendix B), except for the area needed for production (approximately two acres). The well, if producing, would be connected to a pipeline system for production of gas and oil. Based on similar wells in the area, 150 days would probably be required for drilling and completion of the well.

Existing wells do not normally produce quantities of wastewater separable at the well head.

Injection Wells

To ensure maintaining pressure in producing formations, and a continuous flow of hydrocarbons from wells over the life of the project, some natural gas produced would be diverted from product streams and reinjected into producing formations via injection wells. In addition, Mountain Fuel Resources may reinject natural gas for storage, to allow transport out of the area during favorable sales periods.

There are 14 injection wells proposed for the field to assure pressure maintenance: 10 in Taylor Ranch Unit, 4 in Luckey Ditch Unit, 0 in Whiskey Springs Unit, 0 in South Henry Unit, and 0 in noncommitted acreage within the study area. Injection wells would disturb about five acres each. Construction and reclamation of injection wells sites would be subject to the same constraints as production wells.

These wells are considered Class II injection wells and would be permitted by the Wyoming Oil and Gas Conservation Commission. All injection wells must demonstrate mechanical integrity prior to commencing injection activity. Pressure tests, and gamma ray and cement bond logs would be used to test integrity.

Short-term disturbance for all wells would total 350 acres. Long-term disturbance would be reduced to 140 acres.

Access Roads

All access roads would be constructed and maintained to agency specifications. The design criteria process would be followed for all road construction and reconstruction on public and National Forest land. Criteria would be developed using the Forest Service Region 4 (R-4) Oil and Gas Roading Guidelines and Forest Plan Standard and Guides. Design criteria forms would be completed by agency personnel, the oil

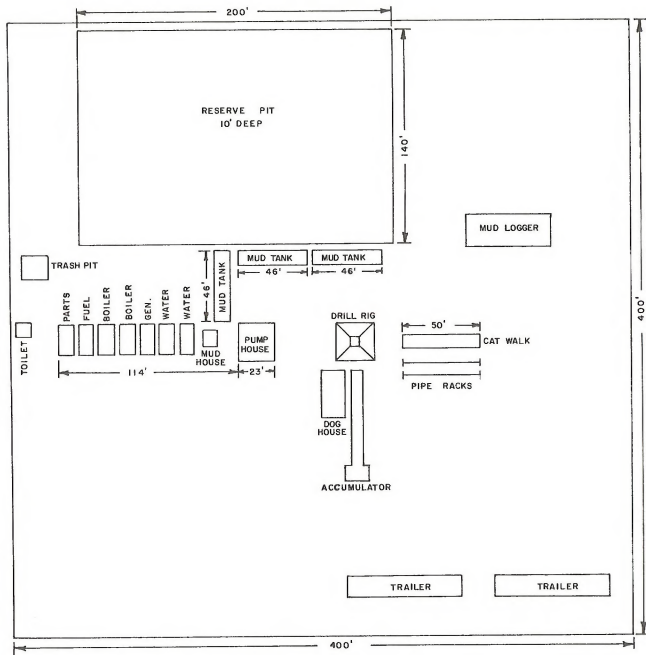


Figure 2-2
Well Site During Drilling Activities

ALTERNATIVES

company, and their consulting firm, as a joint effort in a scheduled meeting. The meeting would be conducted as soon as adequate reconnaissance has been done to identify possible route corridors and pad locations. No road survey or staking work would be done prior to preparation of the design criteria forms. Any construction of all roads within the study area would follow R-4 standards to prevent potential changes in road standards at administrative boundaries.

Where appropriate, existing roads would be upgraded. New roads would be designed to a standard acceptable for the situation after taking resource, engineering, and topographical factors into consideration. Each road would be analyzed and authorized on a site-specific basis. The major activities for road construction would be clearing, topsoil stripping, excavation, construction of drainage ditches and drainage structures, surface cleanup, and restoration of cut and fill slopes, including replacement of topsoil and reseeded the fillslope and the backslope of roads or other disturbed areas not needed as part of the road surface. Side cast, self balance construction would be used on slopes over 10 percent. Side slopes less than 10 percent would require borrow ditch or borrow pit type construction. Surfacing material with adequate binder would be used as needed to carry the traffic. Collector roads would be single or double lane depending on the type of use, traffic volume, and terrain. Local roads would usually be single lane.

Collector Roads

Collector-type access roads are roads that provide central access to and within the study area and to more than one well or other facility. The field development proposal would use existing corridor roads: County Roads Uinta 247, Uinta 260, and Uinta 263; Forest Roads 13, 17, 72, 402, and 155; the road to Diamond Shamrock #32-34, as well as the Reed Road; and portions of unnamed primitive roads within the area. The following roads would be added to the collector system for a total of 27.5 miles of new collector road. (There would be 19½ miles of existing primitive road replaced.)

From existing Sun #2 well to existing Sun #1 well, this road would cross Henrys Fork River to provide access to the Luckey Ditch Unit from the east. The route, as currently proposed, would be located on private surface and state-owned surface; however, the FS would prohibit the public from through use of this section by closure of the existing access road to Sun #1 (from the southwest) at the boundary

of forest and state lands. This portion of the Proposed Action would reduce mileage and traffic of Sun vehicles presently required to access the unit from the southwest. An exclusive easement from the private landowner to Sun would preclude the general public's use of most of this road. There would be 1 2/10 miles of new construction and a river crossing needed for 8 acres of disturbance.

Between Sage Creek road and the access road to Texaco #1-32 well, this road addition would enable through traffic throughout the Whiskey Springs Unit. There would be 1 8/10 miles of new collector required with 12 acres of disturbance.

From Anadarko #A-1 well and Diamond Shamrock wells in the Taylor Ranch Unit, this road would enable through traffic from Taylor Ranch Unit to the nonunit area. There would be 9/10 mile of new collector constructed creating 6 acres of new disturbance.

Local Access Roads

Well site access roads lead to one or a small number of wells or other facilities. With smaller anticipated traffic loads, local roads would not be constructed to the same width as collector roads. For analysis purposes, proposed well site access roads have been plotted on Map 2-1. Actual locations would be determined after site specific assessment. Approximately 37 miles of local road would be constructed. These local well access roads would be gated if within the forest boundary. A Forest Supervisor's Closure of this area would preclude general public vehicle travel within the area except on designated roadways, essentially closing these new local roads to the public.

Assuming maximum disturbance of 50 feet in width for road construction, 415 acres would be disturbed from construction of all new roads in the short term. This disturbance would be partially reclaimed, and long-term disturbance reduced to 331 acres.

Hydrocarbon Processing

Production facilities separate oil, and condensate from natural gas (wet gas-sweet) in the raw hydrocarbon stream. These production facilities are proposed to be located: at the well pad (Anadarko, American Quasar, Conoco, GAE); and at mini facilities (Texaco, Sun, Diamond Shamrock).

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From the production facilities, the wet gas would be piped to central processing facilities. At gas processing plants, the heavier hydrocarbons would be separated from the natural gas stream creating two products: natural gas liquids (NGLs, a volatile liquid product), and dry gas.

Two centralized processing plants are proposed to be located in Luckey Ditch Unit (Sun, American Quasar); and at Phillips existing plant (Texaco, Anadarko, Diamond Shamrock). However, the proposal for location of the Luckey Ditch plant on federal surface has been withdrawn. This plant may be located on private surface.

New disturbance proposed for mini production facilities or for processing plants would be subject to site specific analysis if on public or National Forest lands. Reclamation plans for protection of disturbed soil would be similar to the plans required for well pads and roads; however, these plans would also include designs for sediment control and controlled discharge of runoff from plant sites.

Table 2-2 displays the production facilities and processing plants included in the Proposed Action.

TABLE 2-2
PROPOSED ACTION PRODUCTION AND PROCESSING FACILITIES

Company	Unit	Legal Description
Production Facilities		
Sun	Luckey Ditch	Sec. 16, T. 12 N., R. 114 W. ¹
Sun	Luckey Ditch	Sec. 22, T. 12 N., R. 114 W. ¹
Diamond Shamrock	Taylor Ranch	Sec. 15, T. 13 N., R. 114 W. ¹
Diamond Shamrock	Taylor Ranch	Sec. 35, T. 13 N., R. 114 W. ¹
Diamond Shamrock	Taylor Ranch	Sec. 1, T. 12 N., R. 114 W. ¹
Diamond Shamrock	Taylor Ranch	Sec. 13, T. 12 N., R. 114 W. ¹
Texaco	Whiskey Springs	Sec. 1, T. 12 N., R. 115 W. ¹
		Sec. 36, T. 13 N., R. 115 W. ¹
Texaco	Whiskey Springs	Sec. 29, T. 13 N., R. 114 W. ¹
Anadarko	Uncommitted	Well pad/on site treatment
Conoco	South Henry	Well pad/on site treatment
General Atlantic Energy	South Henry	Well pad/on site treatment
Processing Facilities		
Sun	Lucky Ditch	Sec 21, T. 12 N., R. 114 W. ¹
Phillips	Bridger Lake Field	Sec. 25, T. 3 N., R. 14 E. ²

¹ Within study area, in Wyoming: Sixth Principal Base and Meridian.

² Outside study area, in Utah: Salt Lake Base and Meridian.

Each new facility, except those located on the well pad, would require 5 or more acres to be disturbed by plant construction and use in the study area. This disturbance would remain for the life of the field (20 to 30 years). New construction at the Phillips plant site would disturb 2 acres. Table 2-3 displays total anticipated disturbance from production and processing facilities.

Sun has withdrawn its proposal to locate a 65 acre processing plant on federal surface. It is anticipated that this plant, which would process gas from up to 28 Sun wells in Luckey Ditch and Flash Units, and from Diamond Shamrock well in Taylor Ranch Unit, would be located on private land within the study area.

Phillips proposes to expand their existing gas processing plant to process wet gas from Texaco, Diamond Shamrock, and Anadarko, by adding component processing modules. Power to the plant would require upgrading, and pipelines into the plant would need to be constructed. As part of the project development, an NGL market pipeline would also be constructed along the existing pipeline corridor.

Construction

Construction activities for the production and processing plants would be confined to the plant sites and would include the following general activities:

ALTERNATIVES

TABLE 2-3
ANTICIPATED DISTURBANCE OF HYDROCARBON PRODUCTION
AND PROCESSING FACILITIES

Company	Section ¹	Site (acres)	Access Road (miles)	Pipeline (miles)	Powerline (miles)
Sun ²	16	20	0	0	0.50
Sun ²	22	5	0	1.5	0.75
Sun ²	21	65	2.0	0.1	0.50
Phillips	25	2 ³	0	2.6	3.50
Texaco	29	6	3.5	0.1	8.40
Texaco	36 & 1	30	2.0	1.7	3.00
Diamond Shamrock	15	10	0.2	0.1	6.60
Diamond Shamrock	35	10	0.2	0.2	1.50
Diamond Shamrock	1	10	0.1	0.1	0.50
Diamond Shamrock	13	10	0.1	2.7	2.10
Total		168	8.1	9.1	27.35

¹ Section 25 is in Utah within T. 3 N., R. 14 E., Salt Lake Meridian. All others are in Wyoming, Sixth Principal Meridian.

² Not part of the Proposed Action. Not proposed to occur on federal lands.

³ New disturbance at existing plant site.

Site clearing and grading would be preceded by approval of actual plant site locations and configuration, survey, design, and construction staking. Heavy equipment would be used to clear and grade the site and to separately stockpile topsoil as required.

Facility construction would include fencing of the entire plant site as well as construction of all buildings, tanks, and other required facilities. Water/sediment catchment ponds would be installed at this time.

Equipment installation would include the installation of equipment.

Finish work and testing would involve completion of work and testing of facilities.

Site cleanup and restoration would include removal of all debris from the site after completion of construction. That acreage not necessary for operation of the plant, or remaining cleared for safety reasons, would be reclaimed using the separately stockpiled topsoil, and stipulations outlined in the reclamation plan. Remaining topsoil would not be stockpiled for the life of the field (20 to 30 years), but would be recontoured, spread, and planted on authorized sites to allow it to retain its microbic viability.

Figure 2-3 shows the anticipated plant layout for the Luckey Ditch Unit processing plant. This is the plant that would be expected to be constructed during initial field development. It is also the largest proposed plant. Although this

plant is not proposed to be located on public lands, it displays the necessary facilities for a gas processing plant.

Plant Operation

A total of 38 full-time workers would be required to run the new hydrocarbon production and processing plants over the life of the project (Table 2-4). Phillips currently employs 6 full-time workers at its plant.

TABLE 2-4
PLANT PRODUCTION AND EMPLOYMENT

Company	BPD ¹	MMCFD ²	Total Employees
Sun	8,000	100.0	12
Texaco	11,900	85.0	10
Anadarko	500	3.9	2
Conoco	500	3.9	2
General Atlantic			
Energy	500	3.9	2
Phillips	2,300	50.0	10
Total	23,700	246.7	38

¹ Barrels of oil per day

² Millions of cubic feet of gas per day

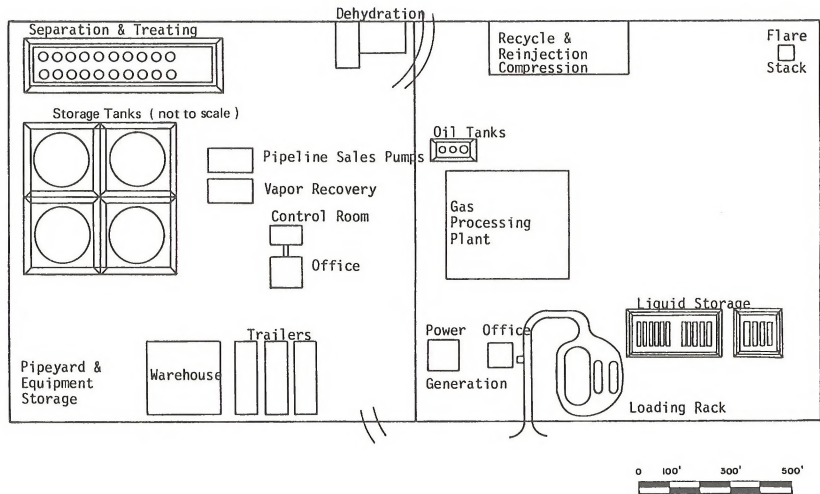


Figure 2-3
Typical Production Facility/Gas Plant Site

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Product Transport

Natural gas would be transported by pipeline throughout and out of the well field. Two trunklines in the area would be used to transport gas out of the study area. The first trunkline owned by Mountain Fuel Resources, begins at the Phillips field, 3 miles south of the study area in Utah, and runs to the north along the west edge of the study area. Eventually, this line provides sale gas to the Salt Lake City area. The second gas trunkline, proposed by Phillips, would run east-northeast from Taylor Ranch Unit wells to a tie in with Northwest Pipeline/CIG residue outlet near Green River, Wyoming, then to eastern markets. Tie-ins to trunklines from all parts of the field would be necessary. The gas trunkline used would be dependent on market conditions and sale agreements between companies.

Currently, the companies are trucking crude oil and condensate to the Phillips field and there it is transferred to a crude oil trunkline (which transports condensate as well) that parallels the Mountain Fuel Resources natural gas pipeline. If it becomes economically justified, all of the companies would pipe crude oil and condensate to the Phillips' trunkline.

All natural gas liquids (NGLs) are currently trucked out of the field. Eventually, an NGL trunk pipeline would be constructed paralleling the existing gas and oil trunk lines. NGLs would be piped if it becomes economically justified.

Some of the produced natural gas would be reinjected into the hydrocarbon reservoir to maintain sufficient pressure. Mountain Fuel Resources would purchase some natural gas to store within the field by reinjection, or transport to market off the well field.

Pipelines

Proposed pipeline locations are shown on Map 2-1. Pipelines would generally run adjacent to existing pipelines and proposed and/or existing roads, if feasible, and determined site-specifically to minimize disturbance.

Pipeline construction occurs in a planned sequence of operations common to all pipeline construction and takes place along a zone of continuous activity. This will be confined to a 85-foot construction right-of-way where necessary, and reduced to a 50-foot right-of-way in areas without severe topographic restrictions. An average maximum 70-foot disturbance is anticipated. Where pipelines would be constructed adjacent to roads, pipeline disturbance would add 20 feet to disturbances from road construction.

A total short term direct disturbance of 300 acres is anticipated. Virtually all of this disturbance would be reclaimed in the short term.

Pipeline construction activities are schematically shown in Figure 2-4 and, after approval of location, would include: surveying; cleaning; removing topsoil, and grading; trenching; pipe laying; and cleanup and restoration.

Surveying

Actual pipeline location would be authorized after on-the-ground inspection.

Right-of-Way Clearing, Topsoil Removal, and Grading

Heavy brush and trees would be removed. Topsoil would be cleared starting from the center line of the trench, and windrowed along the outside edges of the spoil side of the right-of-way. The route would be graded as necessary for passage of construction equipment. The authorized officer would determine whether the entire ROW would be cleared of topsoil or whether the working side would be scalped of vegetation only.

Trenching

Subsoil would be removed from the trench and stockpiled separately from topsoil on the spoil side of the ROW. The minimum ditch width would be the pipe diameter plus 14 inches at the bottom of the ditch. The ditch would be of sufficient depth to permit a minimum pipe cover of 30 inches. The coverage across dry washes would be a minimum of 66 inches and 18 inches in bedrock. Wet meadows or waters would be crossed using other protective measures. The ditch would be excavated mechanically with ditching equipment, however, no blading would be allowed in riparian areas.

Pipe Laying Activities

Pipe laying activities would include stringing, bending, welding, coating, lowering of pipeline sections, and backfilling.

Right-of-way Cleanup and Restoration

Subsoil would be backfilled into the trench over the pipe. Site regrading would occur where necessary. Topsoil would be evenly spread over the disturbed area, (if left intact on the working side and compacted, it will require ripping and

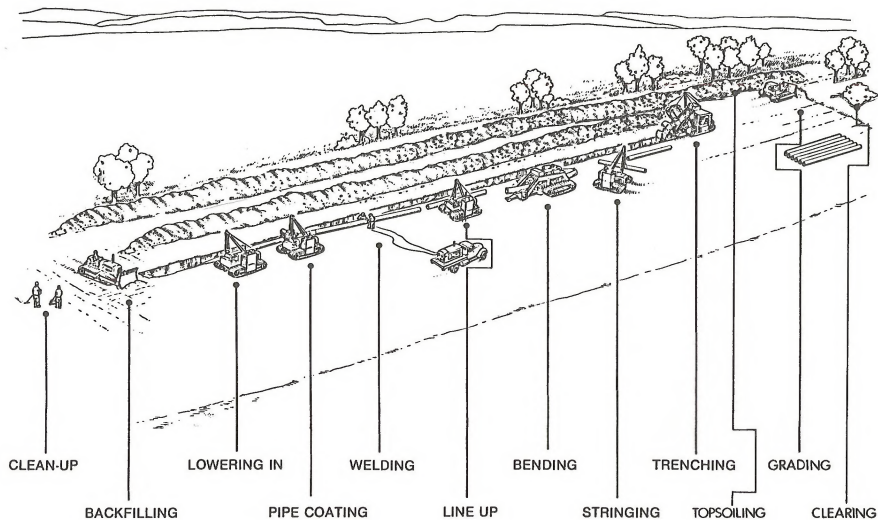


Figure 2-4
Typical Pipeline Construction Spread

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smoothing) and reclamation of the pipeline route would occur as approved by the authorized officer.

Pipe sizes used in the gathering systems would range from 4 to 6 inches in diameter; trunklines could range from 10 to 12 inches in diameter.

Trucking of Liquids

All companies propose to haul oil, condensate, and NGLs by truck rather than through pipelines until it is economic to build pipelines for these products. Dependent on the amount of oil and condensate processed at each plant, 4 to 8 trips by truck per plant per day would be needed, or 48 trips per day to and from plants for the entire field. In addition, oil and condensate separated at well sites by Anadarko, Conoco, and General Atlantic Energy would necessitate an additional 2 truck trips per well per day within the field for an additional 12 trips per day. Under the Proposed Action, up to 60 truck trips per day would occur within the field.

Emergency situations may make it necessary for Sun or Anadarko to haul oil and/or plant products by truck for a limited period of time.

Power Source

Hydrocarbon processing plants and other infield processing facilities would require substantially more electric power than is currently available.

External Sources

Two alternative power sources and routes are identified on Map 2-4. Utah Power and Light Company proposes to bring power into the field from its Painter substation. Bridger Valley Electric proposes to bring power into the field from its Manila substation. Powerline capacity would initially be 138 kV.

Because the Wyoming Public Service Commission, and not the BLM or FS, would determine which of the two proponent companies would serve the area, no further description of these proposals are made or analyzed in this EIS.

Internal Sources

A substation from which power would be distributed in 25kV to 69kV lines is proposed to be located with the Lucky Ditch Unit. From this

substation, elevated distribution lines would follow the access road system, if feasible, to proposed plant sites or processing facilities.

Abandonment

At the end of the useful life of the field and facilities (20 to 30 years), or should a nonproductive well be drilled, the companies would obtain authorization to abandon the facilities or well(s), through submission of abandonment plans for review and approval.

Abandoned wells would be plugged. Pipelines and plants would be purged of gas and condensate, or other contaminants. Pipelines would be plugged and left in place. All aboveground facilities, foundations, and salvageable materials would be removed. Unsalvageable materials would be disposed of at an authorized disposal site. Sites removed from use would be regraded and revegetated using techniques and methods authorized in approved reclamation plans.

The federal, state, or other land-managing or jurisdictional agencies may place reasonable conditions upon abandonment as needed. In addition, abandoned rights-of-way would be returned to the private landowners or agency control.

Total short-term (3 to 5 year) disturbance for all full field development actions would be 1,263 acres. Long-term disturbance would reduce to 551 acres under the Proposed Action.

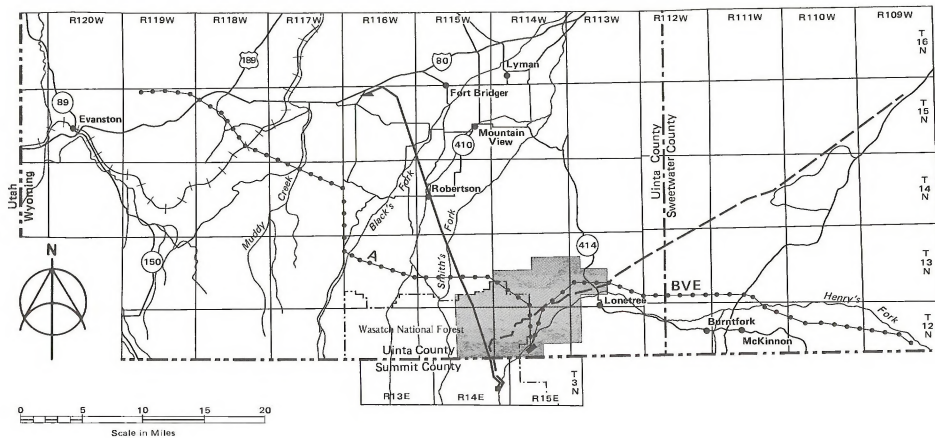
DESCRIPTION OF COMPONENT ALTERNATIVES

Collector Road Alternatives

Several alternatives to collector access are proposed by the companies (Map 2-2). The proposed collector system is described in the Proposed Action. Component alternatives to the Proposed Action are described below:

Existing Collectors Only (1) (see roads labeled 1 on Map 2-2)

This alternative would utilize existing collector roads only, without the addition of the



- ◆ Sun, new Plant Proposal
- Phillips, existing plant
- Hickey Mountain-Table Mountain Study Area
- Powerline Alternatives
 - A— Utah Power & Light
 - BVE— Bridger Valley Electric
- Product Pipeline Routes
 - West: Oil, Natural Gas Liquids and Dry Gas
 - East: Dry Gas Only

Map 2-4
Power and Product Lines

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company-proposed collectors except as absolutely necessary to access all proposed wells and facilities. The Sun loop road from east Luckey Ditch to west Luckey Ditch, and the Taylor Ranch Unit to nonunit loop road would not be constructed, reducing the required disturbance by 14 acres.

Taylor Ranch to Whiskey Springs Tie (2) (see road 2 on Map 2-2)

This alternative would add 0.75 miles of new collector road between Anadarko #B-1 well and the access road to Diamond Shamrock #32-34 well. This would allow through traffic from Taylor Ranch Unit to Luckey Ditch Unit. An additional 5 acres would be disturbed.

Whiskey Springs North Access (3) (see road 3 on Map 2-2)

This alternative would add 1.9 miles of new collector between Forest Road 72 and Texaco #13 well. This would allow through traffic from Forest Road 72 to the Whiskey Springs Unit and 12 acres additional disturbance would be necessary.

Production and Processing Plant Alternatives

A number of possible alternatives to proposed production and gas processing plant sites exist (Map 2-2). The proposed plant sites are described as part of the Proposed Action. The component alternatives to the Proposed Action are listed below. Alternatives described for the Luckey Ditch Unit cover potential sites for location of Sun's 65 acre processing plant on National Forest or public land.

Luckey Ditch Unit (1) and (2)

Alternative processing plant sites (1) and (2) would be located on public lands, to the southeast of Henrys Fork River. Wet gas pipelines from the large portion of the Luckey Ditch Unit would cross Henrys Fork River. Either of these alternatives would site the 65 acre plant on a bench within 1/2 mile of the river.

Whiskey Springs Unit (3)

This alternative would change the production mini-plant proposed for section 29 to a manifold site thus reducing the acreage from 6 acres to 4 acres, and enlarging the retained mini-production facility in sections 36 and 1 from 10 acres to 30 acres. This would eliminate the need for trucks to haul condensate and oil from section 29, by restricting truck traffic to the one retained plant site. The number of proposed truck trips for Texaco's operation would remain the same. The actual locations of the facilities would not change nor would the amount of powerlines, pipelines, and access roads.

Taylor Ranch Unit (4)

An alternative to Diamond Shamrock's four proposed production mini-plant sites would be two production plants located at Sec. 1, T. 12 N., R. 114 W., and Sec. 35, T. 13 N., R. 114 W. The plant site alternative in the southern portion of the unit would have three times the capacity of the proposed three southern plant sites. The northern plant site location would not change under this alternative.

This alternative would restrict fluid truck traffic to the two plant sites. Total trips by truck would remain the same. Two manifolds would be located where the other two plant site locations, at the south end, were proposed. The larger southern plant site would occupy 30 acres. Each of the two manifold sites would occupy 4 acres.

Access roads, pipelines, and powerline mileage under this alternative would not change.

Luckey Ditch Unit (5)

This site, proposed in the draft EIS, at Sec. 18, T. 12 N., R. 114 W., would place the processing plant on the west side of the Henrys Fork, close to most producing wells. Slightly fewer miles of road and pipeline (approximately 2.5 miles) would be required than if the plant were located south of the river.

Product Transport Alternative

The component alternative to the Proposed Action would require transportation of oil,

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condensate, and NGLs through pipelines, rather than trucking. Fluid pipelines would be constructed adjacent to gas pipelines requiring an additional 4 feet for the pipeline disturbance and 8.2 acres of total additional disturbance.

AGENCY PREFERRED ALTERNATIVE

The agency Preferred Alternative is to select some portions of the Proposed Action and some of the component alternatives, to develop a full field development alternative that could achieve development objectives while providing greater protection to other area resources. Map 2-5 displays the actions that would be approved with the Agency Preferred Alternative.

The Agency Preferred Alternative would allow maximum development as proposed, with 56 new production wells, and 14 pressure maintenance gas injection wells, provided that spacing remains as proposed (about 1 well per square mile actual area, except within and adjacent to Luckey Ditch Unit were 2 wells per square mile are proposed.)

Existing collector roads, and the proposed new loop between Sage Creek road and Texaco No. 1-32 well, would be allowed. No other loop roads would be authorized.

All well site local roads, provided that a Supervisor's Closure be implemented within the Forest boundary to prevent general public use of these local roads, and further provided that local roads within the Whiskey Springs Unit are designed to avoid crossing Sage Creek or Little Sage Creek.

Hydrocarbon production facilities would be authorized as follows: Anadarko, American Quazar, Conoco, and General Atlantic Energy - production facilities at the well head (within previously disturbed pad area only); Texaco - one manifold at proposed smaller plant location (4 acres) and one production plant at larger plant location (36 acres) within the Whiskey Springs Unit; Diamond Shamrock - one production plant north of Hickey Mountain (10 acres) and one plant (20 acres), plus 2 manifolds (4 acres each) in the southern $\frac{2}{3}$ of the Taylor Ranch Unit; Sun - 2 new production facilities (5 acres each) south of the Henrys Fork river and in the northwest part of the unit.

Gas processing would be authorized as follows: Companies producing gas within the field will make use of the existing Phillips

processing facility which will be upgraded to the capacity necessary to process all field produced gases. A second processing facility for gases produced within the field may be provided by Sun. The location at Alternative Luckey Ditch (5) (Section 18, T. 12 N., R. 114 W.) would be authorized for the 65 acre site.

All hydrocarbons produced within the field would be transported via pipeline to destination production facilities, processing plant, or markets. No trucking of oil, condensate, natural gas liquids, or gases would be authorized under normal conditions, unless specifically determined by the AO to be necessary, considering the number of truck trips and the distance to available pipelines.

Electric power would be provided by the company authorized by the Wyoming Public Service Commission. Major powerlines into the field would be required to avoid crossing wetland areas. One substation near the eastern or southern boundary of the study area would be authorized within the field under this alternative. Electric power would be distributed within the field via elevated lines if above 25 kv in capacity (unless specifically authorized to be elevated).

The combination of portions of the Proposed Action and selected component alternatives would allow field development to proceed with limited impacts to the human environment. Up to a total of 1,283 acres would be directly disturbed in the short term, and reduced to 547 acres in the long term. Indirect disturbances would be substantially reduced.

Proposals outside the authority of BLM and FS cannot be regulated by the BLM or FS, e.g., private or state surface lands.

DESCRIPTION OF THE NO ACTION ALTERNATIVE

There are 16 wells currently authorized, drilling, or producing in the study area. The No Action alternative would deny the drilling of additional wells. No in-field processing plants would be authorized, other than those already existing at individual well sites. Pipelines to allow production from existing wells would continue but no additional pipelines would be constructed. An additional 38 acres of disturbance to public or National Forest land is anticipated. Additional disturbance would occur on state and private lands.

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All oil and gas leases contained within the study area grant the right and privilege to drill for, mine, extract, remove, and dispose of all the oil and gas deposits (except helium in the leased lands) subject to the terms and conditions incorporated in the lease.

The subject leases contain specific stipulations indicating that before approving any surface-disturbing activity, the Department of Interior may impose "such reasonable conditions, not inconsistent with the purpose for which . . . [the] lease is issued, as the . . . [BLM] may require to protect the surface of the lease lands and environment." Generally, the specific stipulations contained in the leases apply topographical or seasonal restrictions to subject leases. None of these stipulations would enable the Secretary of the Interior to deny all drilling activity because of environmental concerns.

Since the Secretary of the Interior has no authority to deny all activity upon the lease except as described above, denial of proposed drilling could constitute a taking of express rights for which compensation to the companies would be required. Compensation such as exchange, condemnation, or buy back of subject leases would require Congressional action.

The Secretary could only suspend the leases that have not been previously drilled pursuant to Section 39 of the Mineral Leasing Act, pending consideration by Congress of a grant of authority to preclude drilling on these leases, or preclude further drilling on leases with established production.

This aspect of the "no action" alternative has been considered but discarded, since Congress has given no indication to the agencies involved

that it is considering action of the matter. The prospect of securing passage of such legislation and appropriation of funds for that purpose is remote; the geologic inferences are such that the cost would be high, and litigation of values would be required.

Proposals outside the authority of BLM and FS cannot be regulated by the BLM or FS, e.g., private or state surface lands.

ALTERNATIVES NOT FURTHER CONSIDERED

Regulated Timing of Development

A plan for federally regulated scheduling of company starts within certain areas over the next few years was removed from further consideration because potential adverse impacts to resources can be mitigated through the use of seasonal restrictions, making an alternative that regulates the timing of development unnecessary. With mitigation applied in both cases, the impacts from this alternative would not be appreciably different than those anticipated from the Proposed Action.

SUMMARY TABLES

A summary of action and no action alternatives, and their components, is displayed in Table 2-5. Table 2-6 lists and compares the impacts that would be expected from each alternative.

TABLE 2-5
SUMMARY TABLE OF ALTERNATIVES

Component	Existing Development (No Action)	Full Field Development (Proposed Action)	Full Field Development (Component Alternatives)	Agency Preferred Alternative
Oil/Gas Wells	Sixteen production wells.	<p>Add: 56 production wells. 14 pressure maintenance gas injection wells</p> <p>Approximate spacing: 1 well/sq. mile, except in Luckey Ditch Unit where 2 to 3 wells/sq. mile.</p> <p>Assumed disturbance: 5 acres/well.</p> <p>Short-term disturbance: 350 acres.</p> <p>Long-term disturbance: 140 acres.</p>	Same as Proposed Action.	<p>Same as Proposed Action. Add: 59 Production Wells 14 Pressure Maintenance Gas Injection Wells Short-Term Disturbance: 350 acres Long-Term Disturbance: 140 acres</p>
Access Roads Collectors	<p>Uinta County Roads: 247, 260, 263; Wyoming State Highway 414; Reed Road; road to Diamond Shamrock Well No. 32-34; Forest Roads: 13, 17, 72, 155, and 402.</p> <p>Upgraded roads (46.5 miles); 17.5 miles on National Forest; 29.0 miles on non-Forest.</p>	<p>Add: 27.5 miles collector roads; create new collector system over 19.5 miles of existing primitive road plus 8 miles new route.</p> <p>Create three loop roads:</p> <p>(1) Between Taylor Ranch Unit and Nonunit</p> <p>(2) Between N Luckey Ditch Unit and SE Luckey Ditch Unit</p> <p>(3) Sage Creek Road and Texaco Well No. 1-32</p> <p>Assumed disturbance: 50 feet</p> <p>Short-term disturbance: 183 acres</p> <p>Long-term disturbance: 147 acres</p>	<p>Collector Road Alternatives:</p> <p>(1) Subtract 2.1 miles from Proposed Action (14 acres)</p> <p>— do not create loop roads between Taylor Ranch Unit and nonunit</p> <p>— do not create loop road between N Luckey Ditch Unit and SE Luckey Ditch Unit</p> <p>(2) Add 1.0 miles (7 acres) to Proposed Action, create loop road between Taylor Ranch Unit and Whiskey Springs Unit.</p> <p>(3) Add 1.9 miles (13 acres) to Proposed Action, create loop road between Forest Road 72 and Texaco Well No. 13.</p>	<p>Same as Proposed Action, EXCEPT: ALSO select collector road alternatives:</p> <p>(1) Do not create loop roads between Sun Well No. 1 and Sun Well No. 2; and between Taylor Ranch Unit and Nonunit area.</p> <p>A total of 25.4 miles of collector road would be constructed over 19.5 miles of existing primitive road plus 5.7 miles of new route.</p> <p>Short-Term Disturbance: 169 acres Long-Term Disturbance: 123 acres</p>

TABLE 2-5 (Continued)
SUMMARY TABLE OF ALTERNATIVES

Component	Existing Development (No Action)	Full Field Development (Proposed Action)	Full Field Development (Component Alternatives)	Agency Preferred Alternative
Locals	Access Roads to 13 wells exist as well as to other use areas.	Add: 35 miles local well access roads. Assumed Disturbance: 50 feet Short-term disturbance: 232 acres Long-term disturbance: 185 acres Supervisors closure on 11.27 miles of new local roads on National Forest. Close and obliterate all remaining primitive roads on National Forest portion.	Same as Proposed Action for local and primitive roads.	Same as Proposed Action. Add: 35 miles local well access roads. Short Term Disturbance: 232 acres Long Term Disturbance: 185 acres Supervisors closure on 11.27 miles of new local roads within National Forest.
Primitive	106.2 miles primitive roads. 42.7 miles on National Forest. 63.5 miles on non-Forest.		Same as Proposed Action for local and primitive roads.	Close and obliterate all remaining primitive roads on National Forest portion of area.
Hydrocarbon Processing Plants	Production facilities at well head or Sun mini-plant. Processing occurs temporarily at Sun mini-plant. Phillips processing plant presently in operation in Utah.	Production facilities at well head (Anadarko, GAE, American Quasar) or at mini-plants (Sun, Texaco, Diamond Shamrock). Gas processing at Phillips plant (upgraded). (Sun plant, 65 acres, on private surface.) Units. Short- and Long-Term Disturbance: 78 acres on federal surface.	Same processes as in Proposed Action. Move location within Luckey Ditch Unit (3 alternative sites); further centralize production facilities and use manifolds in Whiskey Springs and Taylor Ranch Short- and Long-Term Disturbance: 149 acres Production and Processing Plant Alternatives: (1) Luckey Ditch Unit (2) Luckey Ditch Unit (3) Whiskey Springs Unit (4) Taylor Ranch Unit (5) Luckey Ditch Unit	Select from Proposed Action: Production facilities as proposed, use of existing Phillips plant for gas processing. Or, use Luckey Ditch (5) location. Select from Component Alternatives: (3) Whiskey Springs Unit - 1 processing plant, and 1 manifold; (4) Taylor Ranch Unit - 2 processing plants, and 2 manifolds Short- and Long-Term Disturbance: 94 acres, or 148 acres.

TABLE 2-5 (Continued)
SUMMARY TABLE OF ALTERNATIVES

Component	Existing Development (No Action)	Full Field Development (Proposed Action)	Full Field Development (Component Alternatives)	Agency Preferred Alternative
Product Transport Pipelines	Pipelines transport wet gas within the field; and dry gas and oil out of the field. Route of exit trunklines are from Phillips plant north to I-80 routes via Mountain Fuel Gas, and Phillips oil lines. Conoco and Diamond Shamrock move gas out of field to northeast, to Church Butte processing plant. Oil and condensate are piped in common via Phillips' line.	Move all infield hydrocarbons by pipeline. Construct new NGL line and condensate line from Phillips plant to northwest adjacent to existing trunkline. Another dry gas trunkline may exit to northeast from Phillips plant toward Blacks Fork Arm of Flaming Gorge Reservoir to tie in SiG pipeline to eastern markets. Mountain Fuel would construct new dry gas line adjacent to existing trunkline. Oil out via existing Phillips oil line. Add: 60 miles pipeline for 300 acres disturbance ¹ Reclamation would preclude long-term disturbance except to mature shrub and tree areas.	Same as Proposed Action.	Select from Proposed Action for transport of gas. Also select from Product Transport component alternative for transport of oil, condensate, and NGLs by pipeline rather than truck. Add: 60 miles of pipeline for 300 acres of short-term disturbance.
Trucking	Other oil is trucked from production facilities to Phillips plant to access pipeline. NGLs are trucked with current traffic at least 6 trips per day.	All companies to pipe oil, condensate, and NGLs, when economically feasible. Until then, truck oil, condensate, and NGLs. Up to 60 truck trips/day.	Require all companies to pipe oil, condensate, and NGLs. Disallow trucking. Add: 4 acres short-term disturbance.	Require all companies to pipe oil, condensate, and NGLs. Disallow trucking. Add: 4 acres short-term disturbance.
Power Source	32.8 miles of 800 kW capacity powerlines within study area.	Upgrade available power source. Construct and operate a 6-acre, 2,250 kW electrical substation in Luckey Ditch Unit. Run 65 kV lines to Sun and Phillips	Same as Proposed Action.	Same as Proposed Action, except provide alternative electrical substation site if Sun plant is not constructed.

TABLE 2-5 (Continued)
SUMMARY TABLE OF ALTERNATIVES

Component	Existing Development (No Action)	Full Field Development (Proposed Action)	Full Field Development (Component Alternatives)	Agency Preferred Alternative
		processing plants; 25 kV lines to production mini-plants. Add: 25 miles powerline for 121 acres disturbance. ²		Add: 25 miles powerline for 121 acres disturbance. ²
Abandonment	Require reclamation plans for all phases of development.	More development. Require reclamation plans for all phases of development.	Same as Proposed Action.	Same as Proposed Action. Require reclamation plans for all phases of development.
Summary	Total short-term disturbance: 38 acres. Total long-term disturbance: 15.2 acres.	Total Short-Term disturbance: all components — 1,263 acres. Total Long-Term disturbance: all components — 551 acres.	Same as Proposed Action.	Total Short-Term Direct Disturbance: 1,283 acres Total Long-Term Direct Disturbance: 547 acres

Note: Short term = 20 to 30 years.

¹ Assume 70-foot disturbance; except only 20-foot additional disturbance when pipeline installed adjacent to road, or existing pipeline.

² Assume 40-foot disturbance for powerlines in the short term.

**TABLE 2-6
SUMMARY TABLE OF IMPACTS**

Resource	Existing Development (No Action)	Full Field Development (Proposed Action)	Full Field Development (Component Alternatives)	Agency Preferred Alternative
Wildlife Big Game	<p>Production activities affect crucial big game habitat directly and indirectly. Construction activities have greatest adverse impacts.</p> <p>Direct Habitat Loss: 38 acres.</p> <p>Indirect Habitat Loss: Avoid 438 to 1,806 acres.</p>	<p>Direct Habitat Loss: -409 acres elk calving range; -810 acres elk winter range; -87 acres moose crucial winter range; -1,172 acres moose winter range; -83 acres mule deer crucial winter range; -710 acres mule deer winter range.</p> <p>Indirect Habitat Loss: Construction activities, traffic on roads, human occupation, all would contribute to loss of effective habitat as disturbed animals would avoid these areas.² Wells: avoid 2,850 to 37,260 acres Roads: Collectors—avoid 2,523 to 11,104 acres; Locals—avoid 2,000 to 8,800 acres. Plants: avoid 348 to 2,778 acres. Greater indirect habitat loss in short term; lesser indirect habitat loss in long term.</p>	<p>Collector Road Alternatives: (1) Reduce direct disturbance by 14 acres. Reduce indirect effect on elk winter range and on moose crucial winter range. (2) Increase direct habitat disturbance by 7 acres. Increase indirect effect by creating loop road. (3) Increase direct habitat disturbance by 13 acres. Increase indirect effect by creating loop road. Less overall impact than alternative (2) above.</p> <p>Production and Processing Plant Alternatives: (1) and (2): Increase indirect habitat disturbance to elk and deer winter range, and to moose crucial winter range. Direct bulk of activities on Luckey Ditch Unit nearer to Henrys Fork River and adjacent habitat. (3) and (4): Reduce number of routes subject to heavy traffic, therefore limiting indirect effects to less area. (5): Reduce effects to crucial ranges.</p>	<p>Direct Habitat Loss in important ranges: -386 acres elk calving range; -741 acres moose crucial winter range; -1,055 acres moose winter range; -88 acres mule deer crucial winter range; -583 acres mule deer winter range.</p> <p>Indirect Habitat Loss: Construction activities, traffic, and human occupation would contribute to loss of effective habitat as disturbed animals would avoid these areas.²</p> <p>Wells: Avoid 2,850 to 37,260 acres.</p> <p>Roads: Collectors - avoid 2,523 to 11,104 acres. Locals - avoid 2,000 to 8,800 acres.</p> <p>Plants: Minimize avoidance acreages in field than Proposed Action.</p> <p>Less indirect habitat loss in short term. Lesser indirect habitat loss in long term.</p>

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TABLE 2-6 (Continued)
SUMMARY TABLE OF IMPACTS

Resource	Existing Development (No Action)	Full Field Development (Proposed Action)	Full Field Development (Component Alternatives)	Agency Preferred Alternative
Soil	Existing natural erosion including landslides. Planned production facilities for existing wells (pipelines) would cause direct disturbance to soils. 38 acres would be directly disturbed.	Total short-term disturbance of 1,329 acres. Disturbance to 122 acres of sensitive soils would reduce soil productivity. Development on 384.6 acres of moderate to severe landslide hazard areas would increase risk of accelerated erosion and mass wasting.	Collector Road Alternatives: (1): Reduce disturbance to sensitive soils by 4.2 acres; 9.8 acres nonsensitive. (2): Additional disturbance to 7 acres nonsensitive soil. (3): Additional 12 acres disturbed of which 1 acre is on sensitive soil. Production and Processing Plant Alternatives: (3): Whiskey Springs main plant would increase development adjacent to moderate to high landslide hazard area by 6 acres. (4): Additional 12 acres soil disturbance, nonsensitive. Product Transport Alternative: Increase disturbance by 4 feet along pipeline routes.	Total short-term disturbance of 1,283 acres. Disturbance to 119 acres of sensitive soils would reduce soil productivity. Wetland soils across Henrys Fork would be avoided by preclusion of collector road. Production and Processing Plant Alternatives: (3): Whiskey Springs main plant would increase development adjacent to moderate to high landslide hazard area by 6 acres. (4): Additional 12 acres soil disturbance, nonsensitive. Product Transport Alternative: Increase disturbance by 4 feet along pipeline routes.
Watershed	Several past incidents have introduced hydrocarbons into the watershed of the study area. Sage Creek was found to contain oil/grease in July 1986.	Increased sedimentation from construction activities, and increased potential for incidents causing hydrocarbons to enter streams with potentially significant impacts to water quality. Large plant and heavy traffic road would affect Henrys Fork River, although not on federal land.	Same as Proposed Action, except Collector Road Alternatives: (5): Impacts would occur away from the Henrys Fork River. Product Transport: Hazard of spill reduced by piping rather than trucking.	Reduced impacts than Proposed Action due mainly to: -Preclusion of collector road to cross Henrys Fork River. -Luckey Ditch Unit plant away from river. -Transport of oil products by pipeline rather than truck would reduce risk of spills.

TABLE 2-6 (Continued)
SUMMARY TABLE OF IMPACTS

Resource	Existing Development (No Action)	Full Field Development (Proposed Action)	Full Field Development (Component Alternatives)	Agency Preferred Alternative
Visual Resources	Some wells and roads do not currently meet visual resource objectives.	<p>Full field development would change character of the area from semi-natural to man-influenced. 3.8 acres if FS VQO=Partial Retention; 397.4 acres FS VQO = Modification; 502 acres of BLM VRM Class III; and 236.8 acres of BLM VRM Class IV area would be disturbed.</p> <p>Drill rigs would not meet visual resource objectives for a 4- to 6-month period.</p> <p>Large plant sites may not meet objectives unless they can be screened by vegetation or topography. Piping oil would create less visual impact than trucking.</p>	<p>Same as Proposed Action, except Collector Road Alternatives:</p> <p>(1): Less visual impact than Proposed Action; both should meet objectives.</p> <p>(2): High potential for visibility to persons using Highway 414, thus would not meet objectives.</p> <p>(3): Should meet visual objectives.</p> <p>Processing and Production Plant Alternatives:</p> <p>(1): Would not meet visual quality objectives.</p> <p>(2): Would meet visual quality objectives.</p> <p>(3): Would meet visual quality objectives.</p> <p>(4): Would partially not meet objectives:</p> <p>(5): Would meet objectives.</p> <p>Product Transport: Reclaimed pipeline corridors would create less of a visual intrusion than would truck traffic.</p>	<p>Full field development would change character of the area from semi-natural to man-influenced. Generally same impacts as with Proposed Action except:</p> <p>-Reclaimed pipeline corridors (for oil) would create less of a visual intrusion than would truck traffic.</p> <p>-Drill rigs would not meet visual resource objectives for a 4- to 6-month period.</p> <p>-Plant sites would meet objectives.</p> <p>Product Transport: Reclaimed pipeline corridors would create less of a visual intrusion than would truck traffic.</p>
Transportation Systems	<p>- 2.3 miles paved road.</p> <p>- 46.5 mile graded road</p> <p>- 120.7 miles primitive roads</p> <p>- 19.6 miles closed primitive roads</p>	<p>Add: 27.5 miles Collector Roads (over 19.5 miles of existing primitive road).</p> <p>-11.43 miles on National Forest</p> <p>-16.09 miles on non-Forest</p> <p>Add: 34.7 miles Local Roads</p> <p>-11.27 miles not National Forest</p> <p>-23.45 miles on non-Forest</p>	<p>Generally, same as Proposed Action.</p> <p>Collector Road Alternatives:</p> <p>(1): Subtract 2.1 miles from Proposed Action.</p> <p>(2): Add 1.0 miles collector to Proposed Action.</p> <p>(3): Add 1.9 miles collector road. Improve loop access.</p>	<p>Add: 27.3 miles collector roads (over 19.5 miles of existing primitive roads). Place supervisor's closure on new local roads in National Forest. Obliterate remaining primitive roads on National Forest.</p>

TABLE 2-6 (Continued)
SUMMARY TABLE OF IMPACTS

Resource	Existing Development (No Action)	Full Field Development (Proposed Action)	Full Field Development (Component Alternatives)	Agency Preferred Alternative
Road Density	2.8 miles/square mile on National Forest. (Road management unit density = 1.4 miles/square mile) 2.4 miles/square mile on entire area.	Close: Place Supervisor's closure ³ on new local roads in National Forest. Obliterate remaining primitive roads on National Forest. Road density on the National Forest would become 1.2 miles/square mile; and 2.5 miles/square mile overall.	Road density would remain similar to the Proposed Action.	Road density would be 1.2 miles/square mile on the Forest and 2.5 miles/square mile overall.
Access	Good public access exists on the National Forest portion of the area. Little to no access onto BLM-managed public lands.	Access would decrease on forest portion and remain difficult onto public lands.	Public access would be similar to that under the Proposed Action.	Public access would be similar to that under the Proposed Action.
Fisheries	Previous incidents have caused hydrocarbons to enter Sage Creek. Thirteen existing wells plus production facilities will retain this risk.	Full field development would increase risk of hydrocarbon spills and sedimentation that could significantly effect fisheries, particularly planned enhancement of Colorado cutthroat trout fishery in Sage Creek and Henrys Fork River. This alternative would concentrate activities near Henrys Fork.	Generally, same as Proposed Action, except Collector Road Alternatives: (1): Would preclude construction of road crossing to Henrys Fork. (2) and (3): Same as Proposed Action. Production and Processing Plant Alternatives: (1) and (2): Would concentrate Luckey Ditch Unit activities nearer to the Henrys Fork River. (3) and (4): Same as Proposed Action. (5): Concentrate activity away from Henrys Fork River.	Full field development would increase risk of hydrocarbon spills that could significantly affect fisheries, particularly planned enhancement of Colorado River cutthroat trout fishery in Sage Creek. Risk reduced by precluding road crossing of Henrys Fork and pipeline oil, and providing for hydrocarbon processing at existing Phillips plant rather than new construction, or by siting new construction away from Henrys Fork River.

TABLE 2-6 (Continued)
SUMMARY TABLE OF IMPACTS

Resource	Existing Development (No Action)	Full Field Development (Proposed Action)	Full Field Development (Component Alternatives)	Agency Preferred Alternative
Vegetation	Planned production facilities for existing wells (pipelines) would continue to disturb small acreages of vegetation. 38 acres would be directly disturbed in the short term.	Vegetation disturbance expected: 121 acres lodgepole pine. 38 acres spruce/fir. 12 acres Douglas fir. 60 acres aspen. 99 acres grazeable woodland. 77 acres subirrigated or overflow (wetland) vegetation 634 acres range type or nonsurveyed. Reclamation would reduce disturbance on 593 acres of vegetation in the short term. Lodgepole pine subject to encroaching mountain pine beetle epidemic.	Collector Road Alternatives: (1): Subtract 14 acres disturbance in aspen and range types. (2): Add disturbance to 7 acres range type. (3): Add disturbance to: 2 acres lodgepole, 1 acres aspen, 1 acre spruce/fir, and 10 acres range type vegetation. Production and Processing Plant Alternatives: (1) and (2): Disturb 65 acres range type on federal land. (3): Add 4 acres disturbance to lodgepole. (4): Add 12 acres disturbance to nonsurveyed vegetation. (5): Add 65 acres lodgepole pine.	Vegetation disturbance expected: 127 acres lodgepole (or 192) 39 acres spruce fir 12 acres Douglas fir 56 acres aspen 99 acres grazeable woodland 73 acres subirrigated 715 acres range or nonsurvey. Reclamation would reduce disturbance on 674 acres of vegetation in the short term.
Threatened and Endangered Species	Sensitive plant <i>Thelaspisma pubescens</i> would not be affected.	Same as No Action.	Same as No Action.	Same as No Action.
Recreation	Most recreational use is in National Forest portion due to access and vegetation. Hunting, sightseeing, and woodcutting are among the most popular recreational activities in the area.	Reduced access, increased visual disturbance, traffic, and other man-caused activities would reduce the quality and opportunities for recreation experience for most present users.	Overall, same as Proposed Action, except Collector Road Alternatives: (1): Less loop collector access than Proposed Action. (2): More loop collector access than Proposed Action. (3): More loop collector access than Proposed Action.	Reduced access, increased visual disturbance, traffic, and other human-caused activities would reduce the quality of and opportunities for recreational experience for most users. Industry traffic would be reduced from the Proposed

TABLE 2-6 (Continued)
SUMMARY TABLE OF IMPACTS

Resource	Existing Development (No Action)	Full Field Development (Proposed Action)	Full Field Development (Component Alternatives)	Agency Preferred Alternative
Livestock Grazing	Little existing disturbance to grazing livestock.	Forage production would be reduced by 70 AUMs in the short term, partially required by short-term reclamation.	Product Transport Alternative: Less traffic and less disturbance to recreating public.	Action by requiring piping of oil.
	Allotment Number	Existing AUMs	Collector Road Alternatives: (1): Not as much forage lost as with Proposed Action, by 0.5 AUMs in allotment 9001.	Forage production would be reduced by 73.5 AUMs in the short term, partially regained through short-term reclamation.
	1425	17	(2): Lose 0.5 additional AUMs in allotment 4003.	Allotment Number
	1441	477	(3): Lose 1.0 additional AUM in allotment 9001.	1425
	1449	451		1441
	1454	1,450		1449
	4013	676		1454
	4014	112		4013
	4015	328		4014
	4016	176		4015
	4017	134		4016
	9001	1,758		4017
Timber Management	Mountain pine beetle epidemic and continued construction of production facilities for existing wells would alter timber management.	166 acres of timber would be removed to allow full field development in the short term. Would not return to precut age class before the end of the life of the field (20 to 30 years).	Production and Processing Plant Alternatives: (1), (2), (3), and (4): Same as Proposed Action. (5): Loss of 4 AUMs from allotment 9001 rather than allotment 4014.	26.5(32.5)
			Product Transport: Less oil/gas field truck creating less hazard to livestock.	Less oil/gas field truck traffic would reduce hazard.
			Generally, same as Proposed Action, except Collector Road Alternative: (3): Add 3 acres timber to be cut.	178 or (243) acres of timber would be cut for full field development in the short term. Would not return to precut age classes before the end of the life of the field (20 to 30 years).
			Production and Processing Plant Alternatives: (3): Add 4 acres timber to be cut.	Lodgepole subject to mountain pine beetle epidemic. Increased access would allow commercial timber sales to utilize more of the area.
			(5): Would increase acreage of timber to be cut by 65 acres.	

TABLE 2-6 (Continued)
SUMMARY TABLE OF IMPACTS

Resource	Existing Development (No Action)	Full Field Development (Proposed Action)	Full Field Development (Component Alternatives)	Agency Preferred Alternative
Social and Economic Environment	Scattered wells and production facilities have enabled employment of from 10 to 100 persons in the well field since 1984.	Development over a period of years would limit the total social and economic impacts that would occur in each year. Employment of 200 persons in 1987, and the next few years would be expected. Long-term employment of 38 persons would be expected for the life of the field (20 to 30 years). Local communities would be able to support both short-term and long-term commuting workers.	Generally, same as the Proposed Action.	Development over a period of years would limit the total social and economic impacts that would occur in each year, as described in the Proposed Action. Employees needed would be less than Proposed Action. Total long-term employment would decrease slightly as trucking of oil products would be precluded.
Cultural Resources	Development would occur on or near five known cultural sites. Previous cultural resource surveys indicate high likelihood of encountering new cultural resources during construction of production facilities for existing wells, possibly up to 26 sites could be discovered. Impacts would be mitigated.	Full field development would uncover many cultural resources sites. Impacts would be mitigated. Potential site occurrence of one site per 48.6 acres could conceivably find 26 sites with full field development. Inventory of high potential areas would be undertaken.	Generally, same as the Proposed Action.	Full field development would discover many cultural sites. Potential site occurrence of one site per every 48.6 acres could conceivably find 26 sites with full field development. Development would occur on or near five known cultural sites. Impacts would be mitigated. Inventory of high potential areas would be undertaken.
Paleontological	Previous findings in the area indicate high likelihood of encountering vertebrate fossils in the Bridger Formation.	Full field development would uncover paleontological resources when occurring on the Bridger Formation. 318 acres of the Bridger Formation is planned to be disturbed. Impacts would be mitigated.	Generally, same as the Proposed Action, except decrease development on Bridger Formation by 6 acres.	Six acres less of the Bridger Formation would be disturbed than with the Proposed Action. Therefore, 312 acres of disturbance may assist in discovery of new vertebrate fossils. Impacts would be mitigated.

TABLE 2-6 (Continued)
SUMMARY TABLE OF IMPACTS

Resource	Existing Development (No Action)	Full Field Development (Proposed Action)	Full Field Development (Component Alternatives)	Agency Preferred Alternative
Health and Safety	Existing uses of the area pose traffic hazards to users. Wildfire hazard from dead and dying lodgepole pine exists.	Full field development would increase traffic and other hazards associated with oil and gas drilling and production activities. Sour gas is not present in the target geological formation and would present no hazard.	Collector Road Alternatives: Additional loop road could reduce traffic congestion and related hazards. (1): Would reduce loop options. (2) and (3): Would increase loop options. Product Transport Alternatives: Substantially reduced traffic hazard by piping rather than trucking oil from the field.	Impacts from full field development would include traffic hazards on roads and other hazards specific to oil and gas development. Traffic hazards would be substantially reduced compared to Proposed Action.
Air Quality	Onsite production facilities have not caused air quality problems to date.	Full field development is unlikely to cause significant impact to local or regional air quality.	Generally, same as the Proposed Action.	Full field development is unlikely to cause significant impact to local or regional air quality.
Geology	Oil and gas would be removed from the Dakota Sandstone Formation. Much would remain irretrievable with only existing wells.	Oil and gas would be removed from the Dakota Sandstone Formation. Some gas would be reinjected to same formation. Virtually all of the available hydrocarbons would be removed.	Same as the Proposed Action.	Same as Proposed Action.

¹ Agency preferred alternative includes Proposed Action as modified by: collector road alternative (1); hydrocarbon processing alternatives to deny new processing plants; and product transportation alternative (pipe oil).

² Avoidance of activity dependent on vegetative and topographic screening, as well as intensity of activity.

³ Supervisor's closure would use gates to prohibit public use of these roads. Authorized users and agency personnel would be the only users of these roads.

⁴ Based on area average of 16 acres per animal unit month (AUM).

CHAPTER 3

AFFECTED ENVIRONMENT

Management of the Hickey Mountain-Table Mountain study area is complex due to differences in agency management policies and concerns. Resource components to be addressed in this chapter will reflect the management direction of each agency where appropriate.

The following resources are not present in the analysis area or would not be affected by the proposal, and will not be addressed in this chapter or in Chapter 4 (Analysis of Environmental Consequences):

Wild and Scenic Rivers

Wilderness Areas

Areas of Critical Environmental Concern (ACECs)

Prime or Unique Farmland

Technical reports containing more detailed information than what is presented in this chapter and in Chapter 4 were prepared to provide the basis for the analysis of impacts to various resources in this EIS. They are available for review at the Bureau of Land Management (BLM) District office in Rock Springs, the BLM area offices in Kemmerer and Rock Springs, the Wasatch-Cache National Forest Supervisors office in Salt Lake City, and the Ranger District office in Mountain View, Wyoming.

The description of the affected environment of the subject area in Utah is located at the end of this chapter.

WILDLIFE

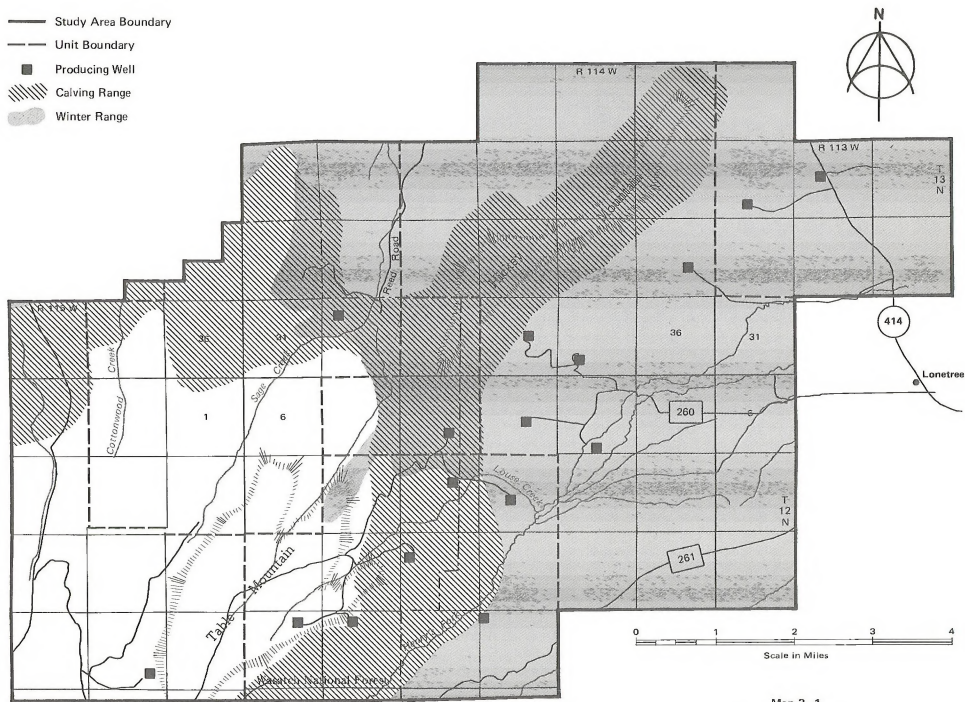
Data and information for this analysis were provided by records on file in agency offices, previous studies, and a special study started in 1986 by the Wyoming Game and Fish Department (WGFD), assisted by Utah Division of Wildlife Resources, and BLM, and funded by the companies proposing activity in the field. A description of the study and its findings are included in the wildlife technical report which provides the basis for the wildlife information in this EIS.

Ten distinct habitat types occur throughout the study area. These include: 1) mixed conifer, 2) Utah juniper, 3) mountain shrub, 4) saltbush-greasewood, 5) big sagebrush-grass, 6) highland sagebrush-grass, 7) aspen woodland, 8) riparian shrub, 9) riverbottom cottonwood, and 10) badlands (habitat site descriptions are appended to the wildlife technical report). These habitats are well interspersed and form a high quality mosaic throughout the study area. Herds cross the state boundary between high elevation ranges in Utah, of the Uinta Mountains to lower elevation habitat of the north slope contained within and near the study area in Wyoming. Much of this analysis deals with the animals as they occur in Wyoming, although it is recognized that the majority of the large big game populations use Utah ranges as well. The study area consists of important winter, summer, yearlong, and parturition (calving/fawning) ranges for elk, moose, and mule deer.

Big Game Species and Habitat

Rocky Mountain elk (*Cervus elaphus nelsonii*) can be found throughout the mixed conifer forest, mountain shrub, aspen woodlands, and riparian shrub habitats in varying numbers at any time of the year. However, the bulk of the summer range is in the southern portion of the area on National Forest lands and farther south into the Uinta Mountains in Utah. Elk use within the study area during the winter period (from mid-November through March), particularly on the flat windswept ridge of Hickey Mountain, is weather dependent and unpredictable. Several hundred elk wintered on Hickey Mountain the last two winters. A summary report on the North Slope elk telemetry project (Grandison 1985) indicates an elk migration corridor across Hickey Mountain exists. Elk that calve within the study area utilize riparian, aspen, and aspen-conifer areas. Elk calving within the study area is a yearly event and calving range is probably more important to elk than is winter range in the long term (Map 3-1).

Elk using the area are part of a larger Uinta-Cedar Mountain herd unit, an administrative unit of the WGFD. The total area used by



Map 3-1
 Elk Seasonal Ranges

AFFECTED ENVIRONMENT

this herd extends into Utah both to the south and west and the total majority of the range use by the population is in Utah. Elk use of the study area is probably already influenced by existing oil and gas activities. WGFD objectives for elk in this area of Wyoming are to increase the wintering population in the herd unit from about 350 to approximately 600 head.

Moose (*Alces alces shirasi*) use the area as winter range, particularly the small drainages off Table and Hickey Mountains, and the Cottonwood Creek, Louse Creek, and Sage Creek drainages during mild winters; often utilizing adjacent aspen stands. Crucial winter range along the Henrys Fork River, and Cottonwood and Sage creeks, is used each winter period. Additional moose summer range occurs outside of the study area (Map 3-2).

Winter and yearlong mule deer (*Odocoileus hemionus hemionus*) range exists throughout the area (Map 3-3). With the advance of winter and heavier snow conditions, deer move to the east, outside of the study area into the broken juniper woodlands of Sage Creek and Cedar Mountains'

south slopes. Other mule deer may move as far away as the LeRoy area to winter. Both moose and mule deer are affected less by human activities than are elk.

Pronghorn antelope (*Antilocapra americana*) utilize the lower elevation portions of the study area, mostly to the east and north, yearlong. Winter concentrations of pronghorn occur on Leavitt Bench, to the north of Hickey Mountain. Pronghorn antelope occur in large populations near the area, and are not considered an issue in this analysis, because crucial seasonal ranges are not involved.

Big game in the study area are subject to disturbances from hunting. Specific seasons are not concurrent between species and across the state border causing a longer period of stress to animals in this area. Based on harvest checks, approximately 50 percent of the elk harvest in this area of Wyoming occurs in the study area. Deer harvest for this section of Wyoming indicates that 35 percent of the kill is within the study area. Table 3-1 displays types and acres of big game seasonal range within the study area.

TABLE 3-1
BIG GAME SEASONAL RANGE
(Acres)

Species	Winter	Crucial Winter	Summer	Calving	Yearlong
Elk	27,195	—	17,163	13,426	24,387
Moose	39,410	3,259	—	—	42,713
Mule deer	19,621	5,106	13,696	—	31,872

Raptors

Raptors utilize portions of the study area for nesting and roosting. Species occupying the study area in winter and spring periods during 1986 included: turkey vulture, golden eagle, northern harrier, sharp-shinned hawk, goshawk, red-tailed hawk, Swainson's hawk, American kestrel, merlin, and prairie falcon.

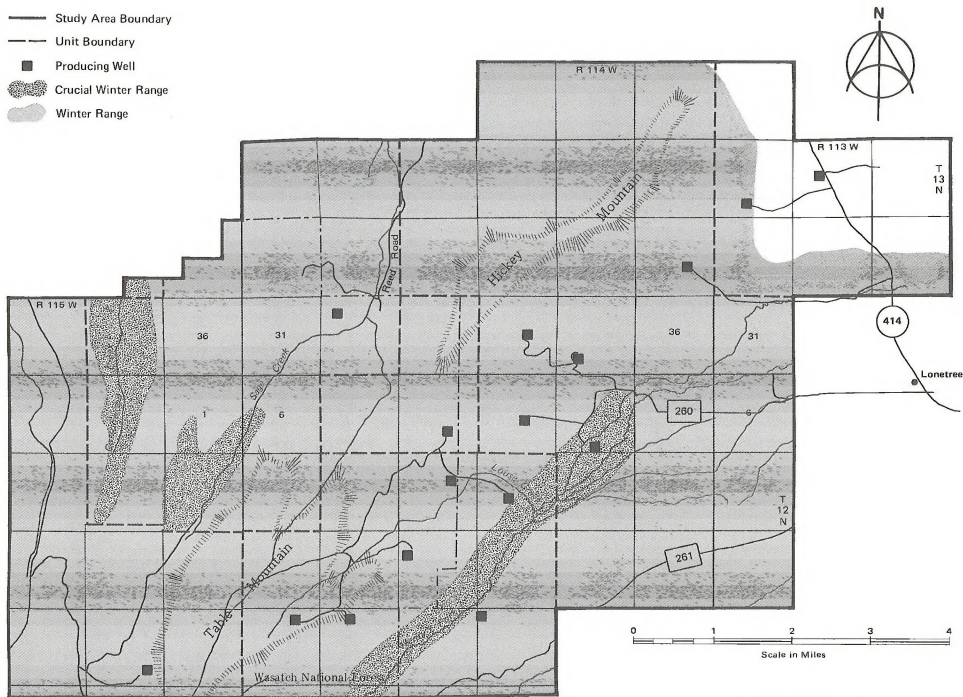
Nesting activities by raptors were inventoried in the summer period in 1986, and results of this study indicate that a small number of raptors may nest in or within one mile of the study area (Wildlife Technical Report). An active golden eagle nest exists on nearby Cedar Mountain to the

east of the study area. In March 1986, a golden eagle pair was observed performing courtship displays, just off the north end of Hickey Mountain.

Other Species

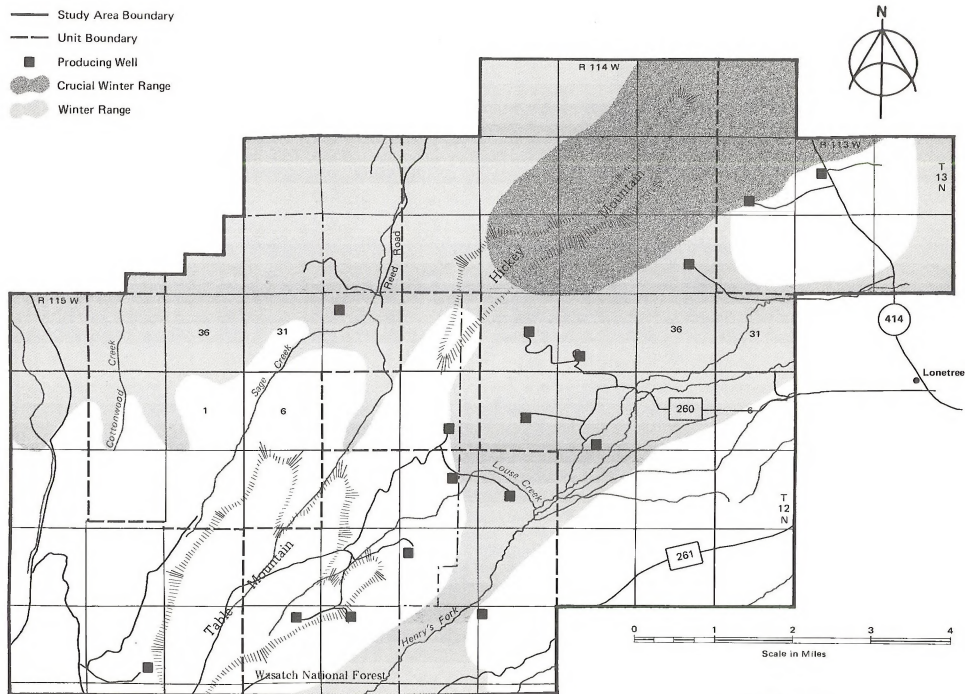
One known sage grouse (*Centrocercus urophasianus*) strutting ground exists within the study area, located in sagebrush in the NW1/4SW1/4, Sec. 13, T. 12 N., R. 114 W. Another strutting ground occurs just outside of the northwestern portion of the study area but within the 2-mile buffer. A third potential site for a strutting ground was located in September 1986.

- Study Area Boundary
- - - Unit Boundary
- Producing Well
- ▨ Crucial Winter Range
- Winter Range



Map 3-2
Moose Seasonal Ranges

- Study Area Boundary
- - - Unit Boundary
- Producing Well
- Crucial Winter Range
- Winter Range



Map 3-3
Muledeer Seasonal Ranges

AFFECTED ENVIRONMENT

A large number of nongame wildlife can be found throughout the area, especially migratory birds and small mammals. Two inventories (Biosystems Analysis, Inc. 1981; Belitsky 1981) sampled the habitat sites previously described as they exist in southwestern Wyoming, for birds, small mammals, reptiles, and amphibians. Within the study area, the dwarf shrew (*Sorex nanus*) was found in 1986, a species not previously found in this region. The listings of species associated with each habitat site are included in the wildlife technical report, and the Wyoming Game and Fish Final Wildlife Report appended to it.

Threatened and Endangered Species

Two bald eagles (*Haliaeetus leucocephalus*) were observed near the study area along the Henrys Fork River towards Burntfork. Ospreys were also observed just outside the study area during the winter period. Peregrine falcons (*Falco peregrinus*) and whooping cranes (*Grus americana*) overfly the general area, but no roosts or aeries have been located. In 1977, an immature male whooping crane (bird 76-17) was found 1/2 mile east of Lonetree, Wyoming. This bird was from the Grays Lake - Bosque del Apache flock and died from impact injuries. It was found under a powerline (Ward, et al 1986). A recent sighting of a whooping crane was reported by a WGFD warden (Sax, personnel communication 1986) in the Mountain View-Carter area, along the flight line which goes over the Henrys Fork River drainage. Two individual cranes have been observed using the area as a spring stopover since 1978. A trumpeter swan (*Olor buccinator*) was also observed two days after the whooping crane in the same area. The general elevation of the area and dominant vegetation types rule out most of the study area from prairie dog (*Cynomys gunnisoni*) colonization. In 1986, one prairie dog town was discovered in Sec. 1, T. 12 N., R. 114 W. The lower elevation areas near this location could also provide prairie dog habitat. Two additional towns and habitat were sighted to the north of the study area near the Reed road. These towns would provide little potential habitat for black-footed ferrets (*Mustela nigripes*), due to the small acreage of the colonies.

Road Density Issue

The number and density of existing roadways within wildlife habitat areas can create an impact to wildlife species due to traffic along those roads. As part of the Wasatch Cache National Forest Land and Resource Management Plan (1985), an

acceptable level of road density, based on wildlife habitat needs, was determined. Refer to the Transportation Section and the wildlife technical report for additional information.

SOILS

The soil report and map contained in the soils technical report for this analysis were developed by:

1. Utilizing soil information from the reconnaissance soil survey of the Forest Service's Mountain View Ranger District and use of a third order, semi-detailed soil survey of the Salt Wells Area, Sweetwater County, Wyoming (Soil and Land Use Technology Inc. under contract to BLM). These surveys covered approximately three-quarters of the study area, and are useful for broad resource and activity planning.
2. Photo interpretation and ground truthing of the study area which is not covered by the above surveys or where data needs were identified, occurred in the spring and early summer of 1986.
3. Additional information and assistance on landslide analysis were provided by Doug Gilmer and Jim Case of the Geological Survey of Wyoming.

Soil Types

Soils of the Hickey Mountain-Table Mountain area have formed from a wide variety of geologic material, ranging from formation over underlying rock (termed residuum) to those formed in material transported by water (alluvium), gravity (colluvium), and ice (glacial till). These parent materials, along with variable moisture regimes, topography, vegetation, and management, produce soils with diverse characteristics.

Generally, geomorphic surfaces within the study area are composed of flat-topped, high elevation ridges, with steep side slopes along their flanks. Short, lower side ridges radiate from the major northeast-southwest trending ridge (Hickey Mountain and Table Mountain) with alluvial fans forming in predominantly ephemeral drainages. The Henrys Fork River is skirted with alluvial deposition ("Modern" floodplain) and older outwash materials to the south and east. The East Fork of the Smiths Fork (western portion of the study area) consists of lateral, medial, and terminal moraines (glacial) and outwash materials.

AFFECTED ENVIRONMENT

The study area is divided into four geomorphic groups consisting of 15 soil-landform units (for specific management, location, and development limitations, and descriptions of the soil-landform units, refer to the soils technical report).

Geomorphic Group 1

Alluvial and Meadow Lands. This group includes meadow bottoms and young alluvial drainages and fans of lower and intermediate elevations. These lands are nearly flat to gently sloping. Soils are predominately deeper than 10 feet and are variable in texture. Glacial outwash does occur in units within the Henrys Fork and Table Mountain areas. Rapid permeability, alkalinity, and a fluctuating water table are limitations to development and rehabilitation on these soils which occupy 7,699 acres of the study area. Castello, Brownsto, Dalquist, Forelle, and Grieves are representative soil series.

Geomorphic Group 2

Sedimentary Uplands. This group includes upland sideslopes, ridges, and drainages in the Bridger Formation and the Bishop Conglomerate of intermediate and high elevations. These lands consist of sloping to very steep topography with variable soil textures and depths. Wind and water erosion hazards run from moderate to severe. Generally, limitations to development include gravelly and cobbly textures with rapid permeability, low water holding capacity, and cutbank unraveling tendencies. In areas consisting of Bridger Formation, water erosion hazards are severe, shrink-swell is high, and poor reclamation success can be expected due to lack of suitable topsoil, high alkalinity, and salinity. There are 12,245 acres of group 2 in the study area. Millpot, Leavitt, Youlaj, Horsely, Blazon, Blackhall, Grieves, Tittsworth, Goslin, Liebig, Amsden Variant, Teemat, Burntfork, Teeler, Southhace, Alcova, and Brownsto are representative soil series.

Geomorphic Group 3

Deep Depositional Lands. This group includes units in the Table Mountain-Cottonwood Mountain areas and south of the Henrys Fork River. Old stream terraces, conglomerate ridges, glacial drift, outwash, and moraines on gently sloping to steep topography dominate on these lands. The soils are generally deep and gravelly or cobbly in texture. Erosion hazards are from slight to moderate, and permeability from

slow to rapid. Seasonally high water tables occur in some areas. There are 10,881 acres of group 3 soils in the study area. Fleutsch is a major representative soil series.

Geomorphic Group 4

Unstable Landslide Areas. This group includes moderately sloping to steep, irregular topography, with rumpled micro-relief. These may have seeps, meadows, and small potholes associated with landslides, flows, and slumps. A large proportion of the soils in this group have seasonal water tables within the soil profile. Erosion hazard is moderate to high. Mass stability problems are moderate to severe. There are 10,749 acres of group 4 soils in the study area. Amsden, Redmanson, and Swiftcreek are representative soil series.

Specific Area Soil Problems

Natural erosion occurs within the study area, predominantly in the form of water erosion (sheet, rill, and gully); mass movement (slump-earth flow, debris flow, and slides); and to a limited extent wind erosion (deflation). (For this report, the term erosion implies a net loss of soil materials from a given site. Natural erosion is the detachment and movement of these materials under conditions unaffected by the activities of man. Accelerated erosion is man-induced detachment and movement of soil.)

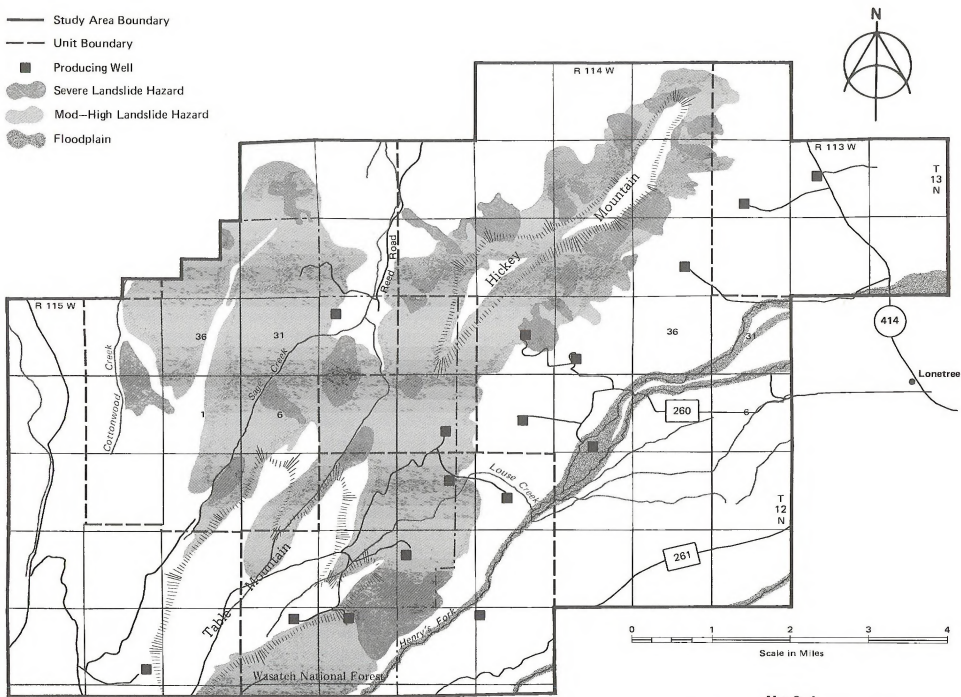
Water and Wind Erosion

Photo interpretation and general soil data indicate significant natural soil erosion (water) occurs within the Bridger Formation and on recent landslide areas. In areas with exposed Bridger Formation, soils are generally saline-alkaline with sparse ground cover and exposed soil surface which are susceptible to water erosion. These areas make up 11,698 acres within the study area.

Wind erosion occurs on the benches and high terraces of Hickey Mountain. These areas make up 4,539 acres within the study area.

Landslides

Significant mass movement is obvious throughout the Hickey Mountain - Table Mountain complex (Map 3-4, derived from preliminary Wyoming Geographical Survey



Map 3-4
 Landslide Hazard and Watershed

AFFECTED ENVIRONMENT

Maps, photo interpretation, and on-site verification). Mass movement in this area can be separated into three types: slump-earth flow, debris avalanche, and debris flow. Slump earth flow is the most significant type of mass movement in the area.

Slump-earth flows occur in areas where stresses are great enough to cause discrete failures. Slumps occur as a rotational movement of a block of earth over a broadly concave slip surface. Where slumps break up and flow downslope or form a series of sliding blocks, the movement is called an earthflow. Transfer of earthflow materials to drainage channels takes place by debris avalanches and flows (shallow landslides), and erosion of exposed surfaces. In stable conditions, the internal frictional resistance of the soil and underlying porous material retards downslope movement. However, in undisturbed conditions, increases in the amount of water can decrease the frictional resistance of the material, often triggering mass movement.

In the study area, the above factors, in conjunction with geologic factors, control the occurrence of slump-earth flows. The periphery of the Bishop Conglomerate in relationship to the Bridger Formation (horizontal, flat-lying formations) contains the bulk of the existing mass movement in the study area. The Bishop Conglomerate is highly permeable, allowing moisture to move downward and become "perched" above the relatively impermeable Bridger Formation in an aquifer situation. These aquifers infiltrate permeable zones in the Bridger Formation as well as migrate along the contact zone becoming exposed as perennial springs and seeps. This source of water along with annual snowpack and subsequent melt enters cracks, fissures, and pervious zones creating internal water pressures and saturation, reducing internal friction and uplifting (with a buoyancy effect). These effects become greater as more water accumulates. Eventually, the saturated mass is pulled downslope by gravity.

In the study area, mass movement can be divided into two relative regional landslide populations (from reconnaissance photo interpretation and field examination):

Ancient Landslides

Ancient landslides are generally inactive (relict) and are the most stable among mass movement in the area. They are presumed to have been formed under a moist climatic regime unlike that of today. Climate-induced landslides are more

stable today than they were in the past (Palmquist and Bible 1980). Moisture regimes can be altered, and reactivation can occur; therefore, these areas have a moderate to high landslide hazard (11,453 acres).

Recent Landslides

Recent landslides are active, either currently moving or suspended, in which case the failure remains and movement may be renewed. In the study area, factors pertaining to the Bishop Conglomerate and Bridger Formation and the influx of localized moisture (snowpack and aquifers) contribute to the presence of active landslides. These slide areas are characterized by raw scarps and bare soil, numerous springs, poorly established vegetation, and are highly unstable. There are 2,815 acres of recent landslides within the study area.

Accelerated Erosion

Identification of accelerated erosion within the study area has been through photo interpretation and field review of existing disturbances. Two types of erosion are affected by construction activities: surface erosion and mass erosion (mass movement-landslides).

WATERSHED

The Hickey Mountain - Table Mountain area is located in the upper reaches of the Colorado River drainage system. Activities, both natural and manmade, that impact local water quality and uses potentially also impact the Lower Colorado River Basin. Salinity and sediment addition to local drainages directly affects the amounts carried in the lower river system, due to the nature of area soils.

The annual precipitation in the area ranges from 14 to 20 inches. Of the total precipitation, snow accounts for 44 percent, and rain 56 percent.

The major perennial streams in the area which have associated floodplains are Henrys Fork River, Poison Creek, and Sage Creek. The remainder of the streams can be characterized as first and second order-type channels, which generally flow into the major stream channels listed above. Table 3-2 displays the types of waters that are found within the study area.

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TABLE 3-2
EXISTING WATER SOURCES
OF THE STUDY AREA

Source	Miles	Number	Acres
Intermittent streams	114.8	—	—
Perennial streams	42.8	—	—
Irrigation ditches	8.0	—	—
Springs	—	7	—
Ponds	—	—	16.7
Floodplains	—	—	1,094.3

The Henrys Fork River and Sage Creek are classified by the Wyoming DEQ as Class II streams. This quality presents restrictions to activities as follows: in all Class I and II waters, the discharge of substances attributable to or influenced by the activities of man shall not be present in quantities which would result in a turbidity increase of more than 10 NTUs (nephelometric turbidity units).

Stream channels at the lower elevations in the northeastern sectors of the area can be characterized by high-magnitude, low-frequency-type floods, which can be quite destructive. The remainder of the streams, because of higher precipitation and associated good ground cover, can be characterized by low-magnitude, low-frequency-type floods, which cause much less damage to the channel and riparian zones.

Major sources of ground water in the area are Bishop Conglomerate, Bridger Formation, and alluvial deposits (Welder 1968). The more productive of the three are the Bishop conglomerate and alluvial deposits.

Most of the springs in the area come directly from the Bishop Conglomerate and are associated with slump areas. The majority of the nine water wells in the area are located in the river alluvium along the Henrys Fork, and are used for irrigation, livestock, or domestic use. The remainder of the water wells, usually associated with oil and gas exploration, penetrate the Bridger Formation and are generally of poorer quality than the other formations.

Current oil and gas development has caused some damage to the floodplain of the Henrys Fork River, due to construction of a pipeline crossing. Hydrocarbon spills occurred on two well pads near the west edge of the study area. These spills occurred on the well pads, drained through the pads, and resurfaced at the pad edges. Other incidents occurred that caused reserve pit fluid to enter Sage Creek, and a fine spray of hydro-

carbons was released over another well pad when the production well cap was disabled due to high winds. Significant damage did not result from any of these incidents. However, water quality monitoring initiated in 1986 determined that oil/grease occurred in Sage Creek at levels of 6.2 milligrams per liter (mg/l) in July of that year. Levels of less than the threshold value of 5.0 mg/l were found again in September. Levels of less than 5.0 mg/l were found in all streams and springs monitored in May 1986.

VISUAL RESOURCES

Portions of the study area are characterized by low mountains and semi-arid basins with a variety of landscapes: rolling sage plains, badlands, river bottoms, alkali flats, playa lakes, juniper hills, isolated timber stands, deep canyons, and altered landscapes. The remainder, primarily the western one-third, is elevated but moderate topography covered by dense stands of timber interspersed with small open meadows or sage flats.

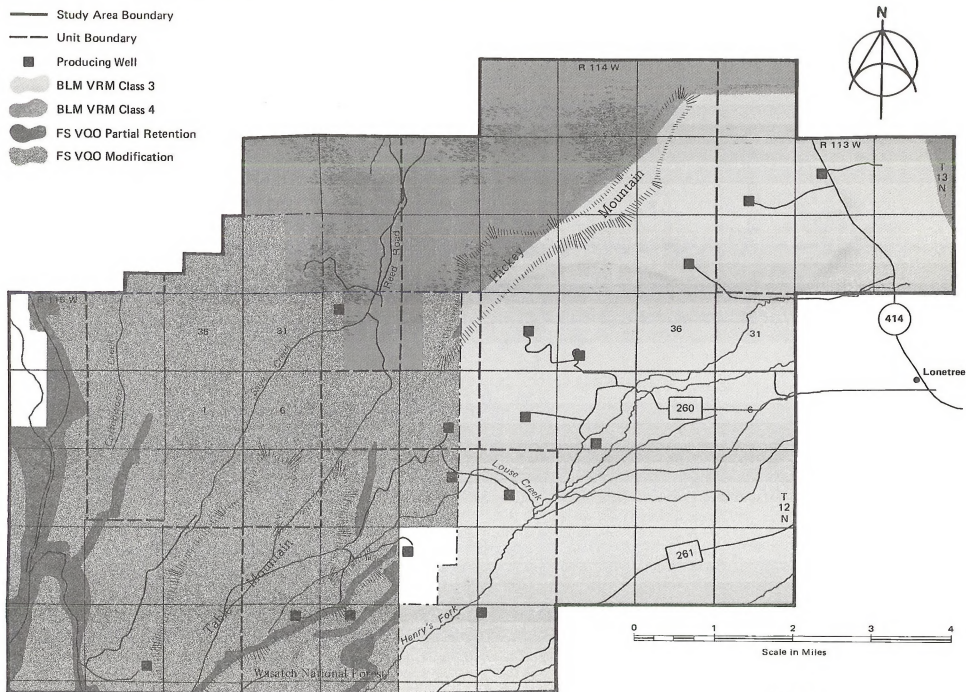
The visual management objectives for the National Forest portion of the study area are identified using a different terminology and system than the BLM. National Forest visual quality objectives (VQO) are prescribed by the Wasatch-Cache Forest Plan and Environmental Impact Statement. Approximately 1,951 acres of the study area are classed as Partial Retention and 14,413 acres as Modification (Map 3-5).

A VQO of Partial Retention requires that management activities be visually subordinate to the surrounding landscape. Mitigation measures for new activities should be designed to meet this objective within one year. A VQO of Modification provides that management activities may visually dominate the character of the landscape, but activities must blend with the landscape.

BLM uses the Visual Resource Management (VRM) system. The VRM system is an analytical process that identifies, sets, and meets objectives for maintaining scenic values and visual quality. There are five Visual Resource Management Classes: I, II, III, IV, and V. Generally speaking, Classes I and II include the most visually important scenic areas and Classes IV and V the least.

A VRM inventory has not been completed for the BLM-administered portions of the study area. However, BLM has identified scenic quality areas through the planning process and based on this phase of the VRM inventory, has determined the study area to be VRM Class III and IV. Approximately 19,025 acres of the study area are

- Study Area Boundary
- Unit Boundary
- Producing Well
- BLM VRM Class 3
- BLM VRM Class 4
- FS VQO Partial Retention
- FS VQO Modification



Map 3-5
Visual Resource Management Categories

AFFECTED ENVIRONMENT

VRM Class III and 7,850 acres are VRM Class IV (Map 3-5).

Class III allows basic elements caused by a management activity to be evident, but provides that they should remain subordinate to the existing landscape. Class IV allows contrasting actions to attract attention and be a dominant feature of the landscape in terms of scale, but provides that the activity should repeat the form, line, color, and texture of the characteristic landscape.

State and private lands are not known to be under constraints for visual resource quality; however, activities on these lands could be visible from adjacent National Forest or public lands.

There are 13 oil and gas well pads existing within the study area. Facilities on the pads range from active oil and gas drill rigs, to large storage tanks, to minor facilities associated with pipeline transport of oil and gas. These oil and gas pads are served by two lane gravel roads, some of which required substantial cuts and fills.

When the oil and gas pads are occupied by a drill rig, visual quality objectives are not usually met because of height and color. Occasionally, their location has enough topographic and vegetation screening to meet objectives. This visual intrusion is temporary and the scenic qualities return to a more normal state when the drill rig leaves the site. Compliance with visual objectives by storage tanks depends on color and location. Several current sites with storage tanks do not meet the objectives because of tank color. Road construction has caused temporary reduction in visual qualities but the objectives have normally been met when revegetation of cut and fill slopes is completed.

TRANSPORTATION SYSTEMS

This discussion addresses the existing collector and local road systems. Collector roads provide access from the Wyoming State Highway System to the analysis area. Local roads provide access within the analysis area and areas of connected influence.

The collector system includes the Bridger Lake (China Meadow) and the Henrys Fork routes. Oil companies have traditionally plowed snow on one or both routes. Recent oil and gas development in the analysis area has shifted most of the use to the Henrys Fork access, via Wyoming Highway 414 to Uinta County Roads 260 and 263.

All road users including timber purchasers and small oil companies have benefited from Phillips Petroleum Company construction and maintenance activities on the collector roads. Current and anticipated level of oil and gas development indicates the need for current road users (oil companies) to agree to reconstruct and maintain the roads to a level commensurate with use.

National Forest Roads

Local roads in the National Forest include three types:

1. Forest development roads assigned numbers and carried on the Forest Service road inventory (32 miles). Of these 32 miles, 17½ miles are constructed to a maintainable single lane standard; and 14½ miles are substandard and primitive.
2. Primitive roads which have evolved from repeated use of an area and not carried on the Forest Service road inventory (42.7 miles). The flat wide ridges make developing a primitive road inexpensive and easy. These roads become a problem as repeated use produces ruts which trap water, resulting in deeper rutting with use.
3. Primitive or constructed roads closed to travel, but not obliterated (19.6 miles). The flat ridges and numerous openings make physical road closures difficult. Users develop alternate routes around barricades.

The terrain is not well suited to minimum impact, economic side cast road construction. The ridge tops are broad and flat, and the side slopes contain intermittent wet areas.

Road Density Issue

The Wasatch-Cache National Forest Land and Resource Management Plan (1985) identified Road Management Standards including appropriate road density levels for various areas on the Forest. The Cottonwood Mountain Road Management Unit (RMU), which includes Table Mountain within the study area, has an existing high range road density of 1.4 miles of road per square mile. The National Forest portion of the study area has a higher density than the average of the RMU, at 2.8 miles of road per square mile. The appropriate road density needed for public use and resource protection was determined in the plan to be not more than 1.4 miles/square mile density.

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Establishment of density levels for road management units considered the following closure criteria (priorities):

1. Public safety
2. Excessive soil loss or water quality degradation
3. Conflict with wildlife habitat use
4. Others, including:
 - road not needed for resource management
 - protection of visual quality
 - return area to forest production
 - reduce user conflicts
 - reduce maintenance costs
 - provide diverse opportunity for nonmotorized recreation

Other direction regarding road density standards include: 1) road density goals will be evaluated each 3 to 5 years; and 2) a road is designated closed when obliterated or gated to prevent other than administrative use.

Current oil and gas activity has enabled conformance with National Forest road density standards in the RMU by establishing closure through obliteration of other roads not needed when new oil and gas well roads are constructed.

Non-Forest Roads

No roads on BLM-administered lands have been identified on BLM transportation plans. Therefore, no roads have been maintained and no easements have been acquired by BLM. The local roads that exist in the area are of the following types:

1. Oil and gas development roads are roads permitted by BLM where they intermittently cross public lands, for oil and gas development which are constructed and maintained by oil companies. Easements across private lands are obtained usually for sole use of the companies. A combination of BLM rights-of-way and private easements make up many of these roads. This includes 21.4 miles of roads built to varying standards.
2. Primitive roads include those roads that have evolved from use with little or no construction. Most of these roads are impossible to block off completely due to topography. These roads have not been inventoried except from aerial photographs, which show about 63.5 miles of primitive roads.

Road density standards are not applicable to BLM, state, and private surface roads. However, for comparison purposes, a density of 2.2 miles/square mile on these surfaces presently exists.

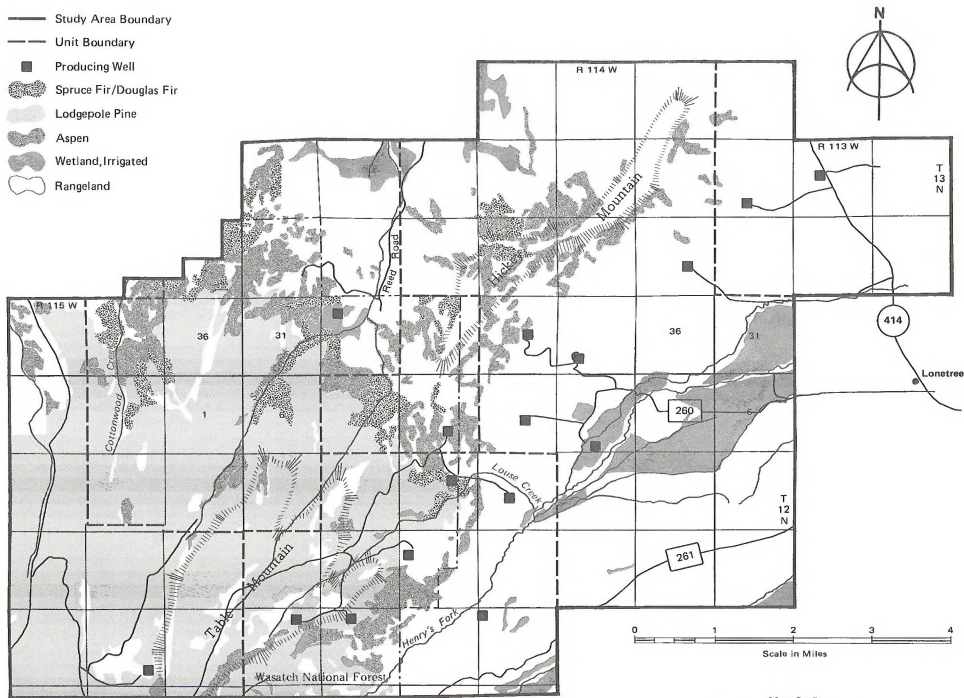
VEGETATION

Vegetation within the study area was identified by range type and woodland, or timber type according to agency inventories and further defined through the use of aerial photo interpretation. Range vegetation was identified by ecological range sites using the 1979 Soil Vegetation Inventory Method survey for public land administered by the BLM. That grazeable vegetation occurring on forest land and state or private land was categorized by grazeable woodlands and range site interpretations from FS data and aerial photography. Forestry values were analyzed using timber types according to agency inventories. Map 3-6 displays major vegetation types occurring the area.

Timber Type

Within the woodland, or timber types which generally occur in the southwestern one third of the area, the primary species is lodgepole pine (*Picea contorta*). Lodgepole forms pure, even-aged stands over large areas, and is often the climax species. Lodgepole pine cones are predominately nonserotinous (open each year) in this locale and the species is known to be a prolific seeder. This characteristic, combined with minimum soil disturbance, normally results in heavy natural regeneration. The study area is within a major mountain pine beetle (*Dendroctonus ponderosa*) epidemic on the north slope of the Uinta Mountains. It is not unusual for 75 percent of the trees over 7 inches diameter breast height to be killed in a single stand. The study area is in the early stages of the epidemic and at this elevation, the epidemic is expected to run its full course. This is expected to create a serious fire hazard in the near future.

Aspen (*Populus tremuloides*) occupies 11 percent of the forested area. Aspen may be the climax species in pure, even-aged stands, or it may be seral if lodgepole pine or Engelmann spruce (*Picea engelmannii*) are present. Aspen reproduces by vegetative suckering. When the aboveground plant is killed, sprouts will appear and rapidly restock the site.



Map 3-6
Major Vegetation Types

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Douglas-fir (*Pseudotsuga menziesii*) and Engelmann spruce/subalpine fir (*Abies lasiocarpa*) are relatively minor species in the study area. Both form stable climax communities in the absence of fire. When disturbed, regeneration is often difficult to obtain. If lodgepole pine or aspen are not present, regeneration may require 10 to 20 years to establish naturally. Douglas-fir is generally confined to the extreme northern edge of the forest.

Range Type

Rangelands have been classified according to broad soil/vegetation units and are typical of the region: within a transition zone between lower-elevation great basin desert type and higher elevation mountains. Major ground cover and forage plants include bunchgrasses such as bluebunch wheatgrass (*Agropyron spicatum*), needlegrasses (*Stipa* spp.), Indian ricegrass (*Oryzopsis hymenoides*), and squirreltail (*Sitanion hystrix*). Common forbs include members of the sunflower family. Wyoming big sagebrush (*Artemisia tridentata wyomingensis*), and rabbitbrush (*Chrysothamnus* spp.), which occur in drier areas, and willows (*Salix* spp.) along waterways characterize the area.

Threatened and Endangered Species

No threatened or endangered plant species are known to occur within the study area. *Thelopsis pubescens*, a Category II sensitive plant has been identified within the study area along the rocky ridge below the east rim of Hickey Mountain, E $\frac{1}{2}$ Sec. 13, T. 13 N., R. 114 W. *T. pubescens* is a low-growing perennial from a thick woody taproot, having mostly basal, pinnate, pubescent leaves and yellow disk flowers. The plant occupies shallow, dry, coarse sites, frequently on ridge lines. A field survey during the summer of 1986 found the plant around the 8,500-foot elevation on the north and east slopes of Hickey Mountain. Approximately 150 acres are occupied by this population.

RECREATION

The National Forest lands support 15,000 to 16,000 recreation visitor days (RVDs) each year (Table 3-3).

TABLE 3-3
NATIONAL FOREST RECREATION
USE IN STUDY AREA

Type of Use	Recreational Visitor Days
Dispersed vehicle camping	4,800
Recreational driving	2,500
Hunting	5,000 ¹
Snowmobiling	1,100
Firewood cutting	550
Motorbiking	350
Fishing	350
Horseback riding	200
Picnicking	200
Miscellaneous including hiking, skiing, etc.	550
Total	16,100

¹ Counted for all the study area, not just National Forest.

Public lands east of the National Forest support similar kinds of activities. While data are lacking, use levels on public lands are probably much lower due to less roaded access, presence of private land holdings not open to public use, and recreationists. In addition, rock-hounding occurs on these public lands.

Peak recreational use occurs during hunting season with an estimated 500 RVDs occurring. About 60 to 70 percent of this use occurs on National Forest land, the remainder is split between public and private lands. Current use on National Forest land is less than 10 percent of annual capacity and less than 50 percent of daily capacity on the highest use day, based on the National Forest prescription of 12 RVDs/acre/year.

Off-road vehicle travel is allowed throughout the study area except for a closure to snowmobile travel on 11,500 acres of National Forest big game winter range, and a closure to all vehicles on Sage Creek Park, Phillips, and Mountain Fuel pipeline corridors. Restrictions to on road travel are in place on access roads into Sun #1, 3, and 4 wells; and the Anadarko No. A-1 access road.

LIVESTOCK GRAZING

The livestock industry utilizing the rangeland within the study area principally manages

cow-calf operations. One grazing allotment supports a combination of yearling cattle and sheep. A total of 17 permittees graze livestock within the study area under authorizations from BLM or the Forest Service. The livestock are trailed onto the allotment(s) where they graze public or forest lands from spring through fall.

All of the project components associated with the Proposed Action are within 12 grazing allotments. A total of 2,831 animal unit months (AUMs) of forage are authorized for grazing use. On the average, 16 acres are needed to provide enough forage for each AUM. Currently, 3,384 cattle, 347 sheep, and 60 horses graze within the allotments represented in the area.

TIMBER MANAGEMENT

Approximately 37 percent of the study area is forested. The forested land is concentrated in the Whiskey Springs and Luckey Ditch units with little timber in the Taylor Ranch or South Henry units. Of the 16,352 acres of forested land, nearly 84 percent (13,712 acres) is National Forest. The remainder is on public, state, or private land. The total volume of merchantable timber is estimated to be 31 million board feet (MMBF).

Timber site productivity for all species is 20 to 50 board feet/acre/year due to the rain shadow of the Wasatch Mountains. Opportunities for intensive forest management are generally good because the major species respond well to release from overcrowding. Timber in the study area is classified as suitable forest land and is managed for sustained yield.

In the past, three large sales (over 1 MMBF) have occurred. In addition, a number of small sawtimber and post and pole sales have been made involving approximately 1,700 acres. About 1,100 acres of dense, pole size lodgepole has been thinned during the last 15 years. Some extremely dense thickets (136 acres) have been pushed over, windrowed, and burned for regeneration purposes. Firewood, post and poles, and salvage sales of beetle-killed trees are the only timber harvest activities planned for the next 10 years. Salvage sales are anticipated to occur in greater frequency than in the past. These sales will be accomplished according to Forest Timber Sale Guidelines, described in the Wasatch-Cache National Forest Land and Resource Management Plan (1985).

FISHERIES

The study area is located within parts of the Henrys Fork and Blacks Fork drainages which are tributaries of the Green River of the upper Colorado River basin. The Henrys Fork River exhibits generally high quality fish habitat and supports one of relatively few self-sustaining populations of native Colorado River cutthroat trout in the Colorado River basin. The Colorado River cutthroat trout is classified in Wyoming as "sensitive" by the WGFD.

The WGFD fishery surveys of the Henrys Fork River indicated the presence of cutthroat trout, mountain sucker, and mottled sculpin.

Louse Creek drains into the Henrys Fork River within the study area. A number of beaver ponds in the middle third of Louse Creek (from NW1/4SW1/4NE1/4 Sec. 17, T. 12 N., R. 114 W.) support trout year-round while the upper portion of Louse Creek is ephemeral. The WGFD has established a brook trout fishery within these beaver ponds and has stocked these fish as recently as 1983 and 1985 (Wingert, Dufek personal communication, 1986). Some siltation of beaver ponds from oil and gas related construction has occurred.

Sage Creek, Little Sage Creek, and Cottonwood Creek drain northward into the Smiths Fork River which eventually flows into the Blacks Fork River and the Green River. Sage Creek contains a wild population of cutthroat trout. Many of the trout in this population have the visual characteristics of the Colorado River cutthroat, although they have been determined to be Class D population. Class D refers to a high level of hybridization with Snake River cutthroat trout.

Although hybridization has taken place, the cutthroat trout stock in Sage Creek could be upgraded and improved (Dufek, personal communication, 1986) either by removing the fish presently in the creek and reintroducing pure-strain fish, or by stocking pure-strain fish over the hybrid fish to upgrade the purity. Regardless of method, Sage Creek is a valuable trout stream. Sage Creek is among a number of streams in the Green River Drainage in Wyoming which are part of the WGFD Colorado River Cutthroat Trout Management Plan, currently under preparation. Table 3-4 reflects information collected on Sage Creek in 1986.

TABLE 3-4

**RESULTS OF FISH SAMPLING AND WATER QUALITY ANALYSIS
FOR THREE LOCATIONS ON SAGE CREEK (1986)**

Location	Date of Sampling	Length of Station	Mean Stream Width	Number of Cutthroats Captured	Estimated Cutthroat Population	Cutthroat		
						Mean Length	Mean Weight	Mean Condition Factor
R115W, T12N, S12	August 11, 1986	655 feet	4.1 feet	3	24/mile 9 lbs/acre 4.4 lbs/mile	7.7 inches	0.18 lbs.	35.7
R114W, T13N, S31,SE1/4	August 12, 1986	609 feet	10.1 feet	24	225/mile 26.9 lbs/acre 32.9 lbs/mile	7.6 inches	0.20 lbs.	44.5
R114W, T13N, S29,SE1/4	August 13, 1986	627 feet	9.6 feet	18	152/mile 18.2 lbs/acre 21.2 lbs/mile	7.9 inches	0.19 lbs.	37.6

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Cottonwood Creek contains adequate fishery habitat but will require annual stocking of brook trout to fully utilize existing habitat.

Siltation of stream bottoms is an important, existing problem within the study area. Silty stream bottoms provide poor spawning beds and limit fishery potential. High siltation levels currently exist in Little Sage Creek and portions of Sage Creek.

SOCIAL AND ECONOMIC RESOURCES

The study area is located in Uinta County, Wyoming, in the southwestern corner of the state. Uinta County has been used as the primary area of influence for this analysis.

Population (21,107 in 1986), employment, income, and housing in Uinta County increased rapidly during the 1970s due to energy developments. Changes in the nation's energy situation in recent years have greatly reduced the rate of growth.

Employment in Uinta County increased 367 percent in the 15 years between 1970 and 1985. At the peak of the oil boom a few years ago, 5,000 workers were engaged in construction, drilling, and production operations in and near Evanston, the largest city within Uinta County (USFS 1986).

The unemployment ratio is the ratio of the number unemployed to the total labor force. The unemployment ratio was very low in 1980 (3.2), but has increased rapidly the last 2 years, 1985 (10.1) and 1986 (11.2). Mining is the leading employer and represents approximately one-fourth of total employment. Non-mining employment is expected to increase slightly in the next few years, with the exception of construction which would decrease substantially in the same period. The labor force in Uinta County in November 1986, was 12,036. The number of unemployed persons was 1,396 (Wyoming Labor Force Trends, 1987.)

Uinta County receives revenues from three major sources: property taxes, redistribution of state-collected taxes (including mineral severance taxes and sales and use taxes), and user charges for services provided by the county. Lesser amounts are received from other sources including interest income, federal revenue sharing, and federal payments in lieu of taxes.

Recent economic developments associated with energy development in the state of Wyoming, and particularly in Uinta County have resulted in

increased housing, enlarged water and sewer capacity, solid waste disposal sites, expanded police and fire protection, improved health care facilities, and more classrooms at all three levels of public education. Due to these developments, the socioeconomic base of the county has been adequate to provide for present field activities, and is in a favorable position to handle more people due to increased employment opportunities that may occur.

CULTURAL RESOURCES

The study area encompasses about 45,510 acres, 6 percent of which have been field inventoried for cultural resources. The inventories were conducted in connection with federally permitted surface disturbance, primarily energy-development related projects. A total of 52 cultural resource sites have been recorded by these surveys and include: 47 prehistoric sites-campsites, knapping, cobble testing, and bedrock quarry sites; and 9 historic sites-cabins, herder camps, corral, cairn (a stone landmark), Fort Bridger to Brown's Park historic road, and a U.S. Dragoon Camp.

Numerous sites have been reviewed for National Register of Historic Places (NRHP) eligibility. These include: 3 eligible sites, 4 status undetermined, 21 potentially eligible sites (assumed eligible, but needing work for a firm determination), and 24 noneligible sites.

Very few of the 47 prehistoric sites have been dated. However, based on the arrow and spear points which were found, it can be concluded that the area has been inhabited intermittently since the Early Archaic period, which dates to about 6,500 years ago.

About half (22) of the prehistoric sites in the study area are classified as campsites. The remaining 25 sites are stone working related sites. The significance of a cultural site is determined by size, complexity, depth, and other attributes. To date, no very complex archeological sites have been identified in the study area. Identification, however, has been limited to surface observation.

Sites with Shoshone style pottery and tipi rings have been found within a few miles of the study area boundary. One burial was also discovered not far from the study area. Similar cultural remains could be found in the study area.

The area has a relatively high incidence of cultural sites, with an average occurrence of one site per 48.6 acres. Approximately 548 acres of the 2,531 acres inventoried are recorded as cultural

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resource sites; thus, about 22 percent of the area can be expected to be part of an archeological or historic site. This occurrence ratio is quite high for Wyoming, where site occurrence averages one site per 60 acres. High site density in and around the study area is indicative of the importance of the area to earlier inhabitants, and important present value as a cultural resource.

The high density of sites in the area can be attributed in part to the occurrence of Lonetree Chert, a translucent brown chert or translucent brown with tan banding "tiger" chert. The chert, which is readily available in the study area in chunks scattered on the surface, or in rock outcrops which may be quarried, was used for stone tool manufacture. These tools have been found on archeological sites 70 miles away, indicating trade or travel. The presence of the chert in the study area also accounts for the relatively high proportion (53 percent) of stone-working related sites.

Both the U.S. Dragoon Camp and the Fort Bridger to Brown's Park historic road are currently listed as undetermined for NRHP eligibility status; they are, however, probably the most complex of the historic sites.

The Fort Bridger to Brown's Park road, also known as the Thornburgh road and the Carter road, crosses the eastern portion of the study area. The road linking Fort Bridger, Wyoming, and Fort Thornburgh, just outside Vernal, Utah, was built in early 1882. Much of the route is now overlain by modern highways. The location and condition of the Carter road in the study area has not been documented. The road, as a whole, is considered potentially eligible for the NRHP, but the integrity and eligibility of the subject segment has not been determined.

The U.S. Dragoon Camp, presumably associated with Dragoons or Cavalry from Fort Bridger, is reportedly in or near the study area. The site was identified by the Wyoming Recreation Commission Historic Division but no further information is available. The source of the report is unknown and the camp presumably has never been found on the ground.

Of the existing ground disturbance in the area, roughly 2,531 acres have been surveyed for cultural resources. These inventories were performed prior to surface disturbing activities. Some inventoried disturbance is located on recorded cultural sites, of which a few are considered NRHP eligible sites. In spite of the eligible status of the disturbed sites, no formal mitigation effort has been necessary thus far within the study area, as disturbance has been

confined to unproductive portions of the eligible sites. Only precautionary measures and minor hearth excavation/salvage work has been conducted in these areas, to date.

PALEONTOLOGICAL RESOURCES

Two formations and several Quaternary deposits are exposed within the area of the proposed development. Of these, only the Bridger Formation contains fossils of significant scientific interest. The Bridger Formation is largely composed of drab gray and green sandy tuffaceous mudstone, with lenses and sheets of sandstone. At the time the Bridger Formation was deposited, about 48 million years ago, the area of the Green River Basin was a wet, forested lowland region, accumulating sediments shed from the Uinta Mountains (in the southwestern part of the basin) and the Wind River Mountains (to the north). A wide variety of primitive mammals, crocodiles, turtles, and other animals inhabited the basin. Of particular interest are the fossil mammals, such as early primates, primitive horses, insectivores, rodents, and several other mammalian orders.

Paleontologists have been collecting, studying, and publicizing descriptions of fossils from the Bridger Formation since the 1870s, starting with Joseph Leidy of the Academy of Natural Sciences of Philadelphia, and continuing to the present day. This time during the Middle Eocene era is known to paleontologists and geologists as the Bridgerian Age, an indication of the abundance and importance of the fossils of the Bridger Formation. Several paleontological site localities are recorded by the BLM as being in or near the area included by the Proposed Action. It should be emphasized that this listing does not include all the potential sites in the area, and that other paleontological site localities will probably be discovered in the future.

About 11,698 acres of the Bridger Formation occur as surficial geology within the study area. Five existing wells and 5.8 miles of pipeline are currently located on the Bridger Formation.

HEALTH AND SAFETY

Public health concerns and issues are limited. Traffic hazards resulting from travel to and from the oil and gas development sites are reduced

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through proper road design and warning signs. Drilling and completion operations involve potentially hazardous equipment and processes. With correct safety procedures and equipment designed specifically for drilling operations most hazardous situations can be avoided. Drilling rig personnel, equipment operators, other contractors, and company personnel are required to be familiar with all safety procedures and equipment.

Mass movement (landslides) has been identified as a potential problem throughout the study area (see description in Soils section of this chapter). Companies working in this area accept the risks associated with developing within known landslide areas. These risks include travel hazards along roads, working hazards on production facilities, and loss of equipment and facilities.

Other safety problems on oil and gas drill sites could result from open excavations and fire. Fire hazards are reduced by following precautionary procedures and by installing the necessary equipment on site. Fire handtools are made available to site personnel. Procedures on existing well locations have been adequate to prevent accidents to date. The various companies are responsible for enforcement of safety procedures and policies to ensure company and contractor personnel adhere to the policies that are set forth.

The target formation has not yielded sour gas (gas containing toxic hydrogen sulfide). There is no credible evidence indicating that a discovery of hydrogen sulfide (H_2O) laden gas is reasonably foreseeable. Therefore, no sour gas is anticipated.

AIR QUALITY

Air quality in the project area is generally very good with low ambient concentrations of pollutants. The area has been designated Class II. Class II areas are those which may be industrialized with release of certain pollutants up to specified concentrations called increments, over the ambient level. Modeled wind fields for the Rock Springs District were prepared to depict general dispersion regimes. The models showed no areas of poor dispersion in, or around, the project area (Riebau, et al. 1986).

GEOLOGY

The study area is located on the southernmost extent of a large subsurface feature commonly

called the Moxa Arch. The arch was created during the late Cretaceous Period when layers of sedimentary rock (formed from sediments deposited under fluctuating marine-nonmarine conditions) were gently bowed upward into a broad, asymmetrical anticlinal fold. The fold axis extends from the Uinta Mountains in Utah northward for at least 120 miles to the vicinity of Big Piney, Wyoming, where geological projections suggest that it passes beneath the Prospect-Darby thrust fault system. Since the folding, the arch has been subject to erosion which stripped off some of the sedimentary strata. Younger sediments subsequently formed strata which now conceal the structure.

Fluids

Hydrocarbon accumulations in Moxa Arch oil and gas fields generally result from a combination of structural and stratigraphic controls which contribute to the formation of reservoir traps. Structural controls include folding, faulting, and/or tilting of the geologic strata. Stratigraphic controls include composition, thickness, distribution, porosity, and permeability of the beds. Although stratigraphic controls appear to dominate in the known fields, the most productive individual wells are located near the crest of the arch, indicating a dominant structural control along the crest (i.e., trapping resulting from folding; Stillwell 1984).

Although both oil and gas have been produced from fields scattered along the entire length of the Moxa Arch, gas is the principal hydrocarbon produced. Production is primarily from the Cretaceous age Dakota Sandstone and Frontier Formation.

Gas discoveries in the study area have been primarily from the Dakota Sandstone from a depth of more than 15,000 feet. Reservoirs are primarily stratigraphically controlled with some enhancement from structural features such as faulting and tilting. This situation is similar to the field at Big Piney-LaBarge on the northern portion of the arch.

Identifying the source and migration of the hydrocarbons and determining reservoir trapping mechanisms in the study area are very complex problems. This is exemplified by comparing two different wells in the area, the Luckey Ditch No. 1 Unit and the Reed No. 2 Unit located just north of the study area. The Luckey Ditch No. 1 encountered approximately 118 feet of Middle Dakota Sand containing 33 feet of "pay sand" producing over 7 millions of cubic feet per day (mmcf/d) of gas and 900 barrels per day (bpd) of oil. The Reed Unit well encountered approxi-

AFFECTED ENVIRONMENT

mately 92 feet of Middle Dakota Sand having reservoir qualities similar to Luckey Ditch No. 1, but the reservoir sands flowed only water at over 400 bpd. The two wells are approximately 6 miles apart and are thought to be on localized structures related to the Moxa Arch. They demonstrate the production variability found in the study area.

In summary, it may be inferred that many parts of the Moxa Arch are potentially productive but that the production may be spotty, related to a variety of complex reservoir trapping mechanisms, and will require multiple exploratory wells to delineate any productive zones. In addition, the crestal portion of the Moxa Arch, particularly the gently dipping western limb of the arch, may hold many stratigraphic and minor structural hydrocarbon traps. Sporadic exploration will probably continue along the western flank as the crestal portion becomes more and more developed.

Solids

Coal

The area involved is not within the Rock Springs Known Recoverable Coal Resource Area. Township 12 North, Range 113 West is included in the Withdrawal of Coal Lands, Executive Order of July 13, 1910. Those formations, which elsewhere in southwestern Wyoming are mined for coal, occur only at depths of several thousands of feet within the study area.

Oil Shale

Section 21, T. 13 N., R. 113 W., of the South Henry Unit is included with Oil Shale Classification Order Wyoming No. 1, by Executive Order 5327. No wells are shown to exist on this section. Those members of the Green River Formation known to contain oil shale are not exposed within any part of the study area, and lie at a minimum depth of several hundred feet in the study area. No plans for the development of oil shale in this area are known.

These depths preclude production of these solid minerals with known mining practices.

Other minerals are not known to occur in the area, or would not be affected by proposed oil and gas field development.

AFFECTED ENVIRONMENT IN UTAH

The area considered in this analysis, that lies within the state of Utah, is located directly south of the study area, within 5 miles of the study area boundary (see Map 2-3). This area contains Sun's Flash Unit (3 proposed wells) and Phillips Bridger Lake Field, in which the existing gas processing plant and product pipelines leading to and from this plant are considered as part of the Hickey Mountain - Table Mountain Project.

Wildlife seasonal use areas are similar to those found within the Luckey Ditch Unit. Elk calving, moose, elk, and mule deer winter ranges would be affected by activities in Utah. No threatened and endangered species, other than those already described as passing through the project study area, are known to occur.

Because oil and gas production and processing has occurred for 20 years in the Bridger Lake Field in Utah, resident wildlife have become conditioned to production activities. Animals are commonly seen on access roads, well pads, and even the Phillips processing plant location.

The Henrys Fork River runs through the area in Utah. The Phillips plant is located within 1/4 mile of the river. None of the three proposed Flash Unit wells would occur in areas of steep slopes or require new access roads to traverse them. Lost Creek would be crossed via an existing road to access the Sun well in section 30. Soils and vegetation are similar to those occurring in the Luckey Ditch Unit. Lodgepole pine is dominant over much of the area and willow/wetland vegetation characterizes the Henrys Fork channel.

Transportation routes have previously been developed from activities within the Bridger Lake field. This applies both to collector access roads and pipeline corridors. Natural gas liquids are currently trucked to market from the plant due to very small quantities produced.

The National Forest Visual Quality Rating for the area has considered existing oil and gas facilities and visual impact. Grazing and timber management activities and objectives are similar to those described for the Luckey Ditch Unit.

The recreating public use oil field roads within the Bridger Lake Field regularly. Plowing of these roads during the winter season has made this area a popular location for snowmobiling.

AFFECTED ENVIRONMENT

The six employees working at the Phillips gas processing plant live in Bridger Valley and commute to the facility.

Cultural resources are considered similar to those occurring within the study area in Wyoming. Paleontological resources are expected to be less important an issue, since the Utah area contains little of the Bridger Formation which tends to occur more on the slopes of Hickey and Table mountains.

Fisheries in the Henrys Fork River are as described previously in this chapter. There are no

known ongoing adverse effects to fisheries from previous construction activities within the Bridger Lake Field.

The existing gas processing plant has no known emission problems. Air quality for this region is generally excellent.

The Bridger Lake Field has produced millions of barrels of oil during the last 20 years. Natural gases are also produced and reinjected, both for storage (by Mountain Fuel) and pressure maintenance (by Phillips).

CHAPTER 4

ANALYSIS OF ENVIRONMENTAL CONSEQUENCES

IMPACTS TO RESOURCES

This chapter provides an analysis of the potential environmental consequences that would result from implementation of the Proposed Action or of the alternatives. Additional detail is available in resource specific technical reports located in Bureau of Land Management (BLM) and Forest Service (FS) offices in Rock Springs, Mountain View, and Kemmerer, Wyoming, and in Salt Lake City, Utah.

The analysis assumes that the general mitigation measures (Appendix C), and particularly the erosion control, revegetation, and restoration guidelines will be followed for all aspects of the development proposals.

Potential Significant Impacts

Some potential impacts from the Hickey Mountain-Table Mountain Project are considered significant. These include:

Cumulative impacts from a concentration of construction activities within a limited and crucial wildlife range, such as the concentration of activities in elk calving range in Luckey Ditch Unit, Whiskey Springs Unit, or elk winter range on top of Hickey Mountain.

A concentration of human activities within a narrow elk migration corridor such as proposed for the northern portion of Whiskey Springs Unit,

Impacts from activities that are not compatible with the management plans of a state or federal agency, such as the potential effects to the elk population that would prevent the population from meeting Wyoming Game and Fish Department objectives.

Substantially increased risk of hydrocarbon spills or man-caused landslide activities due to proposed oil and gas activities.

Wildlife

General Impacts on Big Game Species

Probably the most important wildlife issue is the maintenance of elk calving range within the study area. Of particular concern is the fact that the study area contains 27 percent of the elk calving range within the Uinta-Cedar Mountain elk herd unit, managed by the Wyoming Game and Fish Department (WGFD).

Winter range for elk and moose would be affected by the Proposed Action and alternatives. Elk and moose winter ranges comprise 60 and 86 percent of the study area, respectively. Moose crucial winter range is also an important issue. Essentially, one third (32.4 percent) of the moose crucial winter range within the study area is located along the Henrys Fork River within the Luckey Ditch Unit which would probably experience the most intensive levels of disturbance. The Luckey Ditch Unit (LDU) also contains 26 percent of the elk calving range within the study area.

Additional roads would increase the road density level throughout the study area (which currently is at maximum FS allowable density). Traffic on these roads would result in increased disturbances to wildlife which would cause added physiological stress. During the winter, or calving or fawning periods, this could weaken animals and lead to deaths. Most likely, animals under these types of stresses would leave the area of human activity for other unaffected ranges.

The presence of hundreds of additional people in the area during the construction phase of activities would also increase stress on wildlife. This would be a short-term impact which would be reduced in intensity during the production phase. The production phase impacts, while in magnitude usually much less than construction phase impacts, are long-term, affecting wildlife throughout the life of the project.

ENVIRONMENTAL CONSEQUENCES

Seasonal use restrictions would be applied to areas of big game winter range and to parturition (calving/fawning) range (Appendix B). This would allow the disruptions of construction activities to occur only during nonstress seasons, or when the animals are not present. Production phase activities would occur in every season, contributing to lower levels of stress to big game species.

To reduce the potential effects of higher road densities (miles of road/square mile of study area) on wildlife, road closures would be implemented. To maintain a density in keeping with FS Road Density Guidelines on the National Forest, roads would be closed and/or rehabilitated in areas where the construction of new roads would otherwise exceed the maximum road density level. National Forest road density standards can be met.

During the construction phase, areas of disturbance would be limited to only that which is necessary for project completion. This should keep habitat losses to a minimum. The companies would be required to provide an educational program for all construction and production workers. This program would identify types of wildlife in the area, potential for and circumstances under which animal-vehicle collisions are likely to occur, areas where access would be restricted, and speed limits (both night and day) to reduce the incidence of animal-vehicle collisions.

Table 4-1 summarizes the direct loss of crucial wildlife habitat in each unit, assuming full field development. The Luckey Ditch Unit would probably be affected initially. The Whiskey Springs Unit and the nonunit area would have a reduced level of development as compared to original proposals, while the Taylor Ranch Unit and South Henry Unit would probably have the greatest reduction in potential impacts in the near future. The nonunit area is also shown.

The physical disturbances created by the construction of well pads, access roads, plant sites, etc., represent only a small portion of the impacts to wildlife. The indirect impacts of development activities are more disruptive to wildlife, because big game animals, especially elk, tend to avoid or change their use of habitat adjacent to construction and production activities. The impacts of oil and gas field construction activities on big game species are more intensive, but shorter term than the impacts of production activities. Construction activities involve heavy equipment use, heavy traffic on roads, higher noise levels, more workers onsite, and generally more incidental harassment to wildlife. Production activities, while having a longer term impact, involve fewer people on site, lower noise levels, reduced traffic, and generally, a much reduced level of harassment to wildlife. Elk, and other wildlife, may adjust over time to these activities.

The adverse short-term impacts of construction activities can, however, be mitigated by restricting construction to the time of year when animals are not likely to be in the area.

TABLE 4-1
ACRES¹ OF SEASONAL WILDLIFE HABITAT THAT WOULD BE DIRECTLY LOST AS A RESULT OF FULL FIELD DEVELOPMENT

Seasonal Range	Luckey Ditch Unit	Whiskey Springs Unit	Nonunit	Taylor Ranch Unit	South Henry Unit	Utah	Total
Elk Calving	108	196	58	38	7	2	386
Elk Winter	95	118	53	500	29	15	810
Moose Crucial Winter	36	45	—	6	—	—	87
Moose Winter	285	319	40	499	12	17	1,172
Mule Deer Crucial Winter	—	—	—	70	11	2	83
Mule Deer Winter	168	238	40	237	10	17	710

¹ Seasonal ranges may overlap, and therefore do not total.

ENVIRONMENTAL CONSEQUENCES

Specific Impacts to Big Game

Proposed Action

Production and Injection Wells. Full field development would likely cause significant adverse impacts on elk populations, and would also cause important adverse impacts to other species of big game. Expected disturbances have the potential of preventing the WGFD from meeting herd management objectives for population and harvest.

Production and injection wells are anticipated to directly remove approximately 5 acres each from habitat, resulting in a loss of 350 acres of wildlife habitat in the short term. Direct habitat loss would decrease as wells were completed and either: be abandoned if dry (long-term loss would be zero acres as reclaimed site regained habitat characteristics) or be partially recontoured and reclaimed if productive (resulting in net habitat loss of about 2 acres per well site - 140 acres total). Indirectly affected habitat would range from 44 acres to 573 acres per well site depending on visual screening of human activities by vegetation and topography. Big game, especially elk, would avoid habitat adjacent to human activities resulting in an additional amount of habitat not readily available for their use. Based on the proposal for 70 wells, indirectly affected habitat could range from 3,080 acres to 42,110 acres depending on vegetation screening and topography.

Access Roads. A total of 27.5 miles of collector roads would be constructed to complete the collector road system to serve the proposed drilling operations. Assuming a 50-foot disturbance for access roads (where many would have pipelines constructed adjacent to them), the 27.5 miles would eliminate about 183 acres of big game habitat. Indirectly affected habitat (on both sides of the access road) would range from 2,000 acres to 8,800 acres depending on vegetation screening and topography. This is based on information that indicates elk avoid habitat from 100 yards to $\frac{1}{4}$ mile from access roads (see Wildlife Technical Report). "Indirectly affected habitat acreage may overlap when wells or other facilities are in close proximity to each other. Avoidance of habitat would be based on actual disturbance such as noise, traffic, or other human activities that occur at any point in time."

Approximately 35.7 miles of local roads are proposed to connect drilling sites to the collector roads. The direct habitat loss with a 50-foot right-of-way disturbance is 239 acres. The habitat indirectly affected, which would result in

avoidance behavior by big game (especially elk), would range from 2,523 acres to 11,104 acres depending on visual screening provided by vegetation and topography.

Production and Processing Plants. A total of 76 acres of habitat would be lost due to upgrading one existing processing plant, and construction of six mini-production plants. Indirectly affected habitat adjacent to the plant sites, which would be avoided by big game, would range from 348 to 2,778 acres depending upon visual screening from vegetation and topography, and the levels of activity and noise at the plant sites.

Expansion of the Phillips processing plant would add preconstructed modules on 2 new acres of disturbance. This is not anticipated to adversely impact animals used to activities at this plant.

Construction of production facilities would add to disturbances within units. The Whiskey Springs Unit mini facilities would produce adverse impacts to elk calving range. The Taylor Ranch Unit mini production facilities would be located in winter range for all big games species.

Product Transport. There would be a short-term loss of wildlife habitat and forage where pipelines are constructed. After the pipeline corridors have been reclaimed and seeded, forage would again be available but because of the associated access roads, wildlife would tend to avoid some of these areas. Pipelines constructed outside of the access road rights-of-way would be available for use, depending on distances from access roads and the levels of vehicle traffic. Where pipelines are constructed within the access road right-of-way, an additional 20 feet of disturbance is assumed, and a direct loss of habitat would be encountered. Indirect loss of habitat (big game avoidance) would not increase.

Regular, heavy truck traffic, as proposed with maximum development, would cause significant adverse impacts to wildlife in the study area due to increased likelihood of animal-vehicle collisions, and by causing animals to leave habitat adjacent to these areas. The higher the levels of activity, the greater the acreage of seasonal big game range that would be affected.

Power Source. Power lines within the study area would present little adverse impact to big game species. Where power lines do not follow road rights-of-way, there would be short term, low level loss of forage and cover for elk and deer. As grass and shrubs return to the corridor, additional forage would be available for big game. Other adverse impact on big game may occur due to additional hunting pressures along power line corridors (Ellis, Goodwin, and Hunt 1978).

ENVIRONMENTAL CONSEQUENCES

Abandonment of Operations. To the extent that nonproductive wells are encountered, or when the useful life of the field and facilities has been reached, habitat suitable for wildlife would be restored. Abandoned wells and access roads which are regraded and revegetated would provide habitat to big game if they were outside of the area of avoidance created by nearby wells, plants, and access roads still in use.

As long as soils are protected, the rehabilitation potential throughout the area would remain relatively high because of the region's overall moisture availability.

Collector Road Alternatives

Existing Collectors Only (1). The impacts to wildlife would be similar to those described for the Proposed Action, but the effect on wintering and calving elk would be minimized, due to the nonconstruction of the portion between Sun #1 and #2 wells.

Taylor Ranch to Whiskey Springs Tie (2). This alternative would increase habitat losses in elk winter and calving range by about 6 acres. Because there is little visual screening in this area, an additional 75 to 320 acres of winter and calving range adjacent to the new road would become less effective as habitat for big game. This alternative would connect two different units, forming a driving "loop" which would allow more traffic and more disturbance to wildlife. Such a "loop" would increase administrative problems in enforcing any area closure to recreational traffic.

Whiskey Springs North Access (3). The impacts on wildlife habitat would be similar to the Proposed Action. However, with the 1.7 miles of additional collector road proposed for this alternative, additional habitat losses would occur. Road construction would directly remove 11.34 acres of elk winter and calving range adjacent to the road. Actual areas avoided or indirectly affected by human activity would depend on visual screening and would range from 138 to 608 acres. A migration corridor and calving range would be significantly affected.

Production and Processing Plant Alternatives

Luckey Ditch Unit (1) and (2). The major impact would occur from construction of Sun's processing plant, near to the Henrys Fork River and within or adjacent to elk calving range, elk winter range, moose crucial winter range, moose winter range, and mule deer winter range. Concentration of activity here would produce a significant adverse impact to elk. Potential flaring of gases at this plant would also contribute to new disturbances.

Whiskey Springs Unit (3). The changes outlined in this alternative action would cause little change in direct habitat losses for wildlife. The reduction of the need for daily truck traffic to haul away the oil from two plants to one would reduce the indirect effects of traffic to wildlife in the Whiskey Springs Unit. Therefore, this alternative would have less of an impact on big game habitat than would the Proposed Action.

Taylor Ranch Unit (4). Approximately the same amount of habitat disturbance would occur as with the Proposed Action. The major difference this alternative would offer is a reduction of truck traffic for oil hauling from 4 plants to hauling from 2 plants. Reduction of daily truck traffic would make habitat adjacent to the access roads more effective (available, attractive, and usable) for big game and other wildlife within the Taylor Ranch Unit.

Luckey Ditch Unit (5). This siting for Sun's processing plant would avoid elk calving and winter range, moose crucial winter range, and mule deer winter range. Because its location would be 2 miles from Henrys Fork River, activity would not concentrate there. This alternative location would be effectively screened by lodgepole pine, reducing indirect disturbances to wildlife habitat, in mostly summer ranges.

Product Transport

Pipeline transportation of all fluids (oil, condensate, and NGLs, as well as gas) would eliminate the need for trucking of those products and the associated human disturbance. The limited habitat loss (8 acres) created by adjacent pipeline construction would be more than offset by the reduction in habitat disturbance created by continuous, heavy truck traffic throughout the area.

Agency Preferred Alternative

Impacts to big game would be reduced from those expected under the Proposed Action due mainly to concentration of gas processing at the existing Phillips plant. This would result in a large reduction in the more complex indirect disturbances to big game, when compared to the Proposed Action. Proposed loop roads would not be constructed on public or National Forest lands except at the north end of Whiskey Springs Unit. All hydrocarbons would be piped within and from the study area, rather than trucked. Full field development under this alternative would still cause significant disruptions to big game use of the area, particularly for elk.

ENVIRONMENTAL CONSEQUENCES

No Action

This alternative would halt development, limiting development impacts to present levels with the exception of necessary production facilities. A direct habitat disturbance of 38 acres and an indirect disturbance of about 438 acres to 836 acres is anticipated. The current level of impacts would reduce as time passes, human activity is reduced, and areas are reclaimed. This alternative would be the most beneficial to wildlife because development levels under the Proposed Action have the potential to cause significant disruptions in habitat use and wildlife distributions.

Cumulative Impacts to Big Game

Road Density. Each new access road constructed in the study area builds upon and contributes to the impacts from roads (discussed previously) that are already there. To mitigate the cumulative impacts of new roads added to the existing road system, selected existing roads must be closed and/or obliterated to limit road density to an acceptable level on National Forest portions of the study area.

Commercial Timber Harvest and Fuelwood Cutting. Although no commercial sales of healthy timber are proposed for the area within the next 10 years, the acres of dead and diseased timber throughout the study area would be sold for harvest. Harvest activity, both timber salvage operations and firewood cutting, when elk are present, can result in changes in elk distribution and habitat use. In an area being developed for oil and gas production, timber harvest operations would add to the level of disturbance. To offset this impact, harvest activities should be restricted during the season of greatest impact on elk and moose (calving and wintering seasons). Sale areas should not be located immediately adjacent to access roads, and sale activity should not occur concurrently in drainages adjacent to active oil and gas development activity. Well planned timber harvest operations can be beneficial to elk, deer, and moose by creating forage areas, and by increasing forage quality (Wisdom, et al. 1986). Harvest activities on the National Forest would be subject to Forest Management guidelines that set restrictive dates on harvest activities. Timber harvesting and fuelwood cutting must be coordinated with oil and gas development to ensure that the cumulative impacts of both activities do not exceed wildlife tolerance standards.

Hunting. Elk use of their habitat is dramatically and adversely affected by roads open to vehicle traffic (Wisdom, et al. 1986; refer to the Wildlife

Technical Report for further discussion of this topic). This relationship applies only to areas where elk are hunted. Unhunted herds of elk apparently do not perceive vehicle traffic as a threat or a source of disturbance. Because the elk in the Hickey Mountain - Table Mountain area have historically been hunted, the additional roads and associated vehicle traffic would increase stress on elk. Also, unless there is strict adherence to, and enforcement of road closures, increased hunting pressures (during both deer and elk hunting seasons) would have dramatic and adverse impacts on elk use of the local habitat.

Activities on Private and State Lands

Additional activities would probably occur within the study area, although off of federal surface. Activities may be partially regulated by BLM if they concern federal mineral rights. Some other activities are not within federal control, but would create impacts in addition to those precipitated by activities on federal lands. Sun may construct a 65 acre processing plant within 1/4 mile of Henrys Fork River, on private surface. Impacts from this plant site to big game ranges would be similar to those addressed in Production and Processing Plant Alternatives, Luckey Ditch (1) and (2).

Impacts on Raptors

Although there appear to be a number of raptor species using the Hickey Mountain - Table Mountain area, the general level of activity seems to be relatively low. Regardless of the level of nesting activity, wherever oil and gas construction activity is planned, conflicts with nesting raptors would be mitigated by seasonal restrictions (Appendix B).

The short-term impacts of oil and gas activities would likely be a shifting of nesting areas away from human disturbances. In the long term, areas removed from production would be returned to raptor habitat. It would require many years after the life of the project to return reclaimed drill sites and access roads to nesting habitat for birds of prey.

Ellis, Goodwin, and Hunt (1978) indicate that powerlines pose a threat to many species of birds (due to collisions with wires). To prevent raptor electrocution problems, where the powerline crosses raptor areas, electrocution prevention measures as outlined in the *Suggested Practices for Raptor Protection on Powerlines - The State of the Art in 1981* (Olendorff 1980) should be employed.

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Impacts on Threatened and Endangered Species

No threatened or endangered species are known to reside within the study area. Potential habitat for the black-footed ferret exists south of the Henrys Fork River in the eastern portion of the area and along the Reed Road in the extreme northern portion of the area, but is considered marginal due to the limited size of subject prairie dog towns.

Ferret surveys would be required prior to construction within prairie dog towns. In this manner, impacts on any existing black-footed ferrets would be precluded.

The Henrys Fork River valley in the vicinity of Lonetree, Wyoming, and Manila, Utah, is used by wintering bald eagles. Several of these birds can be observed every winter foraging along the river and roosting in cottonwood trees. The area is also along the migration corridor for peregrine falcons, and receives occasional use by whooping cranes and persistent use by greater sandhill cranes. Many birds of the Grays River whooping crane population fly over the vicinity of the study area during migration periods.

Although few birds pass through the area, the most serious threats to whooping cranes and bald eagles are collisions with powerlines, and persistent human activity in the area. Mitigation would include limitations on the amount of elevated powerlines that would occur in or near wetlands that may serve as feeding areas for whooping cranes, or foraging areas for bald eagles. In addition, elevated powerlines that would be constructed across these wetland areas would be made more easily visible to cranes and eagles by red warning balls attached to lines, or other marking, as recommended by the U.S. Fish and Wildlife Service and WGFD (Lockman 1987).

Long-term impacts of oil field development on eagles and cranes would be minimal if the area is reclaimed properly. Impacts would be greatest under the Proposed Action, and reduced under the Agency Preferred Alternative. The potential difference is based on concentrating activities near the Henrys Fork River, where bald eagles may roost and whooping cranes may occasionally rest or feed.

Because peregrine falcons have not been observed in the area, nesting has not been documented, and habitat has not been identified, implementation of the Proposed Action or other development alternatives would not affect this endangered species.

Soils

General Impacts on Soils

The principal impacts on soils resulting from construction of the Proposed Action or alternatives include the removal of vegetation and the disturbance of soil which would result in a loss of soil and productivity from the site. Construction of the project components would result in direct removal of vegetation, reduced vegetative productivity from sidecasting of earth materials, soil compaction, losses of soil and rock in areas of steep sidehill cuts, and alteration or removal of topsoil resources. Such disturbances would increase surface water runoff and accelerate erosion losses.

Overall, the risk of significant soil impacts would be higher in areas of limited rehabilitation potential (i.e., slopes greater than 25 percent and in reactivated slide areas). These sensitive rehabilitation areas (see Soil Technical Report) would require avoidance or more intensive construction, engineering, mechanical erosion controls, and revegetation practices in order to minimize impacts on soils.

Unstable soils (slumps and slides) are particularly sensitive to development. The larger the area of disturbance, the greater the potential impacts on slope stability. Major excavation requiring extensive cut and fill (drill pads and plant) increase the probability of landslide occurrence. Road standard requirements involve varying volumes of excavation. Landslide occurrence is directly proportional to the volumes excavated. Slide densities approximately double for each step in road standard above the terminal road (Megahan, et al. 1978). Table 4-2 displays the frequency of mass movement impacts to road types.

TABLE 4-2
OCCURRENCE OF
LANDSLIDES PER
ROAD TYPE ON
UNSTABLE SLOPES

Occurrence	Road Type
2.2 slides/km	Arterial
1.2 slides/km	Collector
0.6 slides/km	Local
0.2 slides/km	Temporary/Terminal

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Well pads would not be constructed in riparian areas, and pipeline rights-of-way in riparian areas would rehabilitate quickly. However, additional fill for road construction would permanently alter soil-water relations in the riparian zone, reducing the potential for reestablishment of similar vegetation.

Snow removal from roads, plant sites, and well pads could adversely impact the adjacent drainages by increasing the amount of runoff due to snow catchment, stockpiling, and removal procedures. Increased runoff would heighten the risk of slope failure when introduced into unstable (landslide) areas. In some situations, stockpiled snow may melt slowly, thus extending the period during which snow melt contributes to surface and ground water.

Some small, unquantifiable soil losses would occur prior to rehabilitation efforts during the construction phase. In addition, a few, small, sensitive areas would require follow-up rehabilitation efforts until stabilized. Impacts on soils would generally be insignificant because the implementation of applicable erosion control and revegetation practices would minimize erosion and productivity losses.

Erosion losses would be held within acceptable limits, given: 1) the use of effective erosion control, reclamation, and revegetation procedures; 2) appropriate engineering design of structures and well pads; and 3) avoidance of steep slopes and severe landslide hazard.

Specific Impacts on Soils

Proposed Action

Well Pads. Construction of well pads and plant sites would account for 37 percent of the proposed well field disturbance. Well pads and plant sites would generally be located on more gently sloping surfaces where erosion potential is minimal. However, on steeper slopes where cuts and fills are necessary to construct the pad, impacts on soil would be increased. Sidehill cuts and fills on slopes exceeding 25 percent would create extensive sidewall cuts that may cause slope instability, and would also involve side-casting of large volumes of earth materials onto otherwise undisturbed areas. Such impacts would limit the effectiveness of regrading in cut areas, and would create difficult conditions for site rehabilitation.

Access Roads. New road construction would have the greatest potential for adverse impacts on soil resources. Construction of access roads would account for 33 percent of the potential well

field disturbance. Continued erosion losses could occur along roads due to exposure of bare soil. This impact would be most serious where sidehill cuts are constructed, as previously described for well pads. In addition, access roads could open more areas to off-road vehicular land disturbance. The use of unsurfaced roads during wet weather would subject them to rutting. This would increase the hazard of concentrated runoff and resultant gully erosion. Road construction and maintenance would reduce infiltration rates on road surfaces, disrupt natural drainages (concentrating subsurface and overland flow), and generally channelize runoff.

Production and Processing. Construction of proposed hydrocarbon processing plants would affect 141 acres of generally nonsensitive soils. Large acreages at each site would essentially be taken out of production for the life of the field development project (30 to 50 years).

Product Transport. The pipeline system would account for approximately 23 percent of the proposed disturbance in the well field. Excavation of pipeline trenches would alter soil profiles; however, construction would not require extensive cuts and fills since the system would generally follow gentle slopes or traverse steep inclines. Installation of the gathering system would incorporate erosion control and revegetation measures immediately after disturbance. Accelerated erosion losses would be short-term impacts until pipeline rights-of-way are stabilized (2 to 5 years).

Power Source. Transmission line (7 percent of disturbance) construction would involve less intensive disturbance to soils and cover vegetation than construction of the other facilities. Powerline construction would account for 8 percent of the potential well field disturbance. The impacts would generally be limited to compaction from access trails and to acreage removed by tower sites.

Table 4-3 summarizes acres of soil units that could be affected by implementation of the Proposed Action and alternatives.

Impacts on Sensitive Soils

Proposed Action

Some soil units potentially affected by the Proposed Action or alternatives are particularly sensitive to disturbance (see Soil Technical Report). Construction of the proposed well field would affect approximately 122 acres of soils in sensitive rehabilitation/reclamation areas (Table 4-3). This represents about 10 percent of the

ENVIRONMENTAL CONSEQUENCES

TABLE 4-3
SOIL DISTURBANCE BY ALTERNATIVE
(Acres)¹

Soil Unit	Proposed Action ²	Component Alternatives									Preferred Alternative ²
		Collector Roads ³			Processing Plants						
		(1)	(2)	(3)	(1)	(2)	(3)	(4)	(5)		
B1-Mixed Meadowlands	125	—	—	1	—	—	—	30	—	146	
B2-Alluvial Fans	12	—	—	—	—	—	—	—	—	12	
B4-Benches/ High Terraces	89	—	2	6	—	—	4	—	—	93	
M4-Glacial Uplands	10	—	—	4	—	—	—	—	—	14	
M5-Glacial Till/ Outwash	221	—	—	—	65	65	—	6	—	152	
M6-Knob and Kettle Lands	—	—	—	—	—	—	—	—	—	—	
M7-Conglomerate Pediments	41	—	—	—	—	—	—	—	65	41	
S1-Stable Slumps/Slides	267	—	5	—	—	—	36	—	—	273	
U1-Upland Ridgetops	7	—	—	—	—	—	—	—	—	7	
U4-Mixed Upland Sideslope (below 25% slopes)	247	-10	—	—	—	—	—	16	—	233	
B3-Alluvial Bottomland ⁴	8	-4	—	—	—	—	—	—	—	4	
S2-Landslide Areas ⁴	58	—	—	1	—	—	—	—	—	59	
U2-Disected Bridger Uplands ⁴	44	—	—	—	—	—	—	—	—	44	
U3-Saline Bottomlands ⁴	9	—	—	—	—	—	—	—	—	9	
U4-Mixed Upland Sideslope (above 25% slopes) ⁴	3	—	—	—	—	—	—	—	—	3	
Not determined	147	—	—	1	—	—	—	—	—	149	
Total	1,261	-14	7	13	65	65	36	52	65	1,284	

¹ Numbers are rounded, and include impacts to soil within Wyoming only.

² Includes all components of the alternative (well sites, roads, processing plants, etc.).

³ Component alternative road acreages are in addition to or a reduction from the Proposed Action.

⁴ Sensitive soil units.

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potentially disturbed acreage in the well field. Environmental consequences on these areas would be: difficulty in site restoration (lack of topsoil, saline/alkaline soils, steep slopes), long term erosion losses during and after construction (greater than 5 years of accelerated erosion), and loss of long-term soil productivity in riparian communities.

About 49 percent (58 acres) of the sensitive areas affected by well field development are soils of weakly stabilized slumps and landslides. Due to the high probability of mass movement from development activities and the resulting adverse impacts: mass erosion, direct sedimentation, productivity loss, high stabilization costs, and possible personal injury (see general impacts of mass movement in the Soils Technical Report), these areas were classified as sensitive.

A minor proportion, 1 percent (17 acres) of the sensitive areas of the well field to be affected by the Proposed Action, are characterized by riparian soils, highly erosive soils, and adverse salinity and/or alkalinity affecting reclamation.

Collector Road Alternatives

Existing Collectors Only (1). Construction of the collector routes under this alternative would result in no road construction within riparian soils (B1 and B3 soil units) and erosive areas (U2 soil unit), because of the avoidance of the road proposed between Sun #1 and #2 wells.

Taylor Ranch to Whiskey Springs Tie (2). No additional impact to sensitive soils would occur.

Whiskey Springs North Access (3). This alternative would result in the addition of 1 acre of disturbance on weakly stabilized slump areas.

Production and Processing Plant Alternative

Impacts would be generally the same as under the Proposed Action.

Agency Preferred Alternative

Short- and long-term disturbance of soils would be reduced over the Proposed Action. Enlarging the main production plant in Whiskey Springs Unit would increase disturbance of the area adjacent to moderate to severe landslide hazard. Impacts to sensitive wetland or riparian soils would be reduced by not constructing a collector road across the Henrys Fork River.

No Action

The nature of the Hickey Mountain - Table Mountain area ensures the continuance of natural erosion and of landslides and mass movement caused by natural forces. Prevention of field development in this area would preclude additional soil loss, sedimentation, and potential losses of property, or personal injury due to new development on sensitive or unstable sites. Existing users of the area, as well as companies with existing and drilling wells, would continue to contribute to accelerated erosion and mass movement. Approximately 38 acres of soil would be disturbed due to construction of facilities for previously permitted wells, roads, and pipelines.

Impacts from Utah Proposals

Soils in the Utah portion are similar to those within the study area. The proposals for 3 wells are located on gentle slopes. The area of the Phillips plant is on a bench adjacent to the river. Impacts would be minimized by application of mitigation measures.

Watershed

General Impacts on Watershed

The potential risk of hydrocarbon spill accidents which could significantly impact the watershed, would increase with increased well drilling and pipeline use.

Applied mitigation measures would include those measures necessary to prevent contamination of surface waters and ground water. One measure would prohibit construction of crossings of Sage Creek and Little Sage Creek, where good water quality is essential for introduction of a fishery. Additional precautions include impermeable liners for drilling mud pits, particularly those located in permeable soils (Bishop Conglomerate subsoil structure and others), and a casing and cementing program to protect the Bishop Conglomerate, as well as any aquifer with total dissolved solids of 5,000 mg/l or less. Casing measures would also prevent the intercommunication of poor quality aquifers to the Bishop Conglomerate. Executive Orders 11988 and 11990 would be applied to management of all floodplains and wetlands (see Appendix B for a complete descriptions of these and other measures).

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Monitoring of water quality, both surface and ground water, would be applied. This would enable rapid assessment and elimination of practices contributing to water quality degradation. These monitoring plans are described in the Monitoring Section of Chapter 4.

Specific Impacts on Watershed

Proposed Action

Production and Injection Wells. The Bishop Conglomerate is a very permeable and productive aquifer system, which creates the opportunity for alien substances to enter and contaminate water quality. Wildlife in the area, particularly elk, consume a diet high in selenium, and are highly dependent on local springs. Chromates, which sometimes occur in drilling fluids, when combined with selenium can be quite debilitating to elk. It is essential, therefore, that drilling muds containing chromates not be used in the area, to prevent accidental introduction to springs and streams. Correctly applied mitigation (e.g., pit liners, proper casing, and cementing) would prevent leakage from reserve pits or well holes, that would otherwise cause significant ground water contamination. Seven of the proposed wells would be located on the Bishop Conglomerate.

Access Roads. The number of proposed road and pipeline crossings of Louse Creek in the Lucky Ditch Unit necessitate use of bridges or arch culverts at crossings, rather than circular culverts to prevent excessive impacts.

Processing Facilities. The proposed Lucky Ditch Unit processing plant would be located within ¼ mile of the Henrys Fork River, construction of which may cause excess sediment to enter the river.

The main proposed Whiskey Springs Unit processing plant is located adjacent to an area of historic slumping. Should this area be selected for such a facility, mass movement could be reactivated, producing a substantial amount of sediment.

Collector Road Alternatives

Existing Collectors Only (1). Preclusion of the Henrys Fork River crossing would reduce potential impacts on this major stream such as sediment production from construction and potential hydrocarbon spills from oil trucks using the bridge.

Production and Processing Plant Alternatives

Whiskey Springs Unit (3). Four additional acres adjacent to moderate to severe landslide hazard would be disturbed by construction of the main plant.

Lucky Ditch Unit (5). This processing plant alternative, located on the Bishop Conglomerate, would lead to risks of ground water contamination due to the large quantities of hydrocarbons which would be stored on the site.

Product Transport

Pipeline transport of oil and other liquids, rather than trucking, would have a beneficial impact by reducing risk of spills associated with heavy truck traffic in mountainous terrain.

Agency Preferred Alternative

Generally, the impacts on watershed from the Preferred Alternative would be similar to those expected from the Proposed Action. A beneficial result of this alternative would be the piping rather than trucking of large volumes of oil products. This would decrease risk of spills. Another benefit, over the Proposed Action, would be preclusion of road crossing of Henrys Fork River and the construction of a 65-acre plant near it.

No Action

Selection of the No Action alternative would limit the potential for increased sedimentation or accidents which might produce unacceptable levels of pollutants to springs, streams, and the Upper Green River. However, existing oil and gas production activities would continue, and sediments from previous or existing problems are present in Sage Creek at this time. Measures to limit any existing problems would be implemented in all alternatives.

No Action would also reduce the likelihood of excessive sedimentation into streams as additional wells and accompanying construction would be denied.

Impacts from Utah Proposals

Two acres of new disturbance adjacent to the Henrys Fork River would be required, creating a small source of sediment. Application of zero runoff discharge measures would mitigate this. Construction of well pads and access roads

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would have impacts mitigated by suitable measures. Crossing of Lost Creek would cause some limited short-term sedimentation.

Visual Resources

General Impacts on Visual Resources

The oil and gas development would change the visual character of the study area. This change would occur from two sources: 1) construction of oil and gas exploration and production structures, and 2) clearing of vegetation and shaping of soil.

When the drill rig is in place, the rig would project above the vegetation and be visible. Clearing of vegetation, altering of landform by road and pad construction, and construction of other structures may be visible depending on location and characteristics of form, color, line, and texture.

Degradation of the visual resource would reduce human enjoyment when visiting the area. Excessive degradation would cause some people not to visit the area at all.

Impacts on visual resources caused by oil and gas exploration or production would be considered significant where a proposed facility or site disturbance could not meet existing BLM Visual Resource Management (VRM) class objective or FS Visual Quality Objectives (VQO) in the study area.

Impacts would be judged significant where a proposed facility or site disturbance would be the dominant feature in a landscape with objectives for maintaining a natural dominant character (BLM - VRM Class III; FS - Partial Retention).

Specific Impacts on Visual Resources

Proposed Action

Production and Injection Wells. If the oil and gas companies can be flexible in the location of equipment and facilities and site disturbances, visual quality objectives should be met except during the use of oil well drill rigs. The presence of the drill rig is a temporary impact on visual quality since it moves from the site when the well is completed. This exception usually persists for 2 to 6 months.

Access Roads. Alternatives with greater lengths of road have the potential for greater visual impact. Proper mitigation measures should allow

road construction and reconstruction to meet the visual resource objectives in the study area.

Production and Processing. Large storage or processing structures have the potential to cause highly significant impacts if located in VRM Class III or VQO Partial Retention areas. The proposed Luckey Ditch location is in a VQO Modification area. The visual objective does allow management activities to visually dominate the character of the landscape, but they must blend with the environment. The size and number of structures on this plant site would require very sensitive attention to arrangement, form and color to blend with the surrounding environment. This plant site would be highly visible from the Henrys Fork road and can not be expected to meet visual quality objectives for public lands even with mitigation. This site would be located on private surface.

Collector Road Alternatives

Existing Collectors Only (1). This alternative has the potential for less visual impact than the Proposed Action but both would meet visual quality objectives for the study area.

Taylor Ranch to Whiskey Springs Tie (2). This alternative builds a road high on the south slope of Hickey Mountain in a VRM Class III area. The road has a high potential for visibility by travelers on Highway 414 heading to and from Flaming Gorge National Recreation Area.

Whiskey Springs North Access (3). The additional road in this alternative should meet visual quality objectives for the study area.

Production and Processing Plant Alternatives

Luckey Ditch Unit (1). This plant site in VRM Class III would be highly visible from the Henrys Fork road and cannot be expected to meet visual quality objectives even with mitigation.

Luckey Ditch Unit (2). This Sun plant site is in VRM Class III but has the potential for meeting visual objectives if the structure heights are kept to a minimum, if topographic features are used to best advantage, and if proper colors are employed.

Whiskey Springs Unit (3). These Texaco alternatives would occupy areas with a VQO of Modification. Proper retention of screening and intervening vegetation, proper location of structures, and proper colors should enable meeting visual objectives.

Taylor Ranch Unit (4). The visual objective at these sites is VRM Class III. Proper use of colors would allow these sites to meet visual objectives

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as seen from Highway 414 but the site would be readily visible from County Road 260, which serves the southeastern portion of the Taylor Ranch Unit.

Lucky Ditch Unit (5). This location has the potential to be screened by timber stands adjacent to the road; otherwise it can not be expected to meet visual objectives. Some of the area adjacent to the road is occupied by young trees following past timber harvest. These young stands are not tall enough to fully screen the plant if it occupies an area behind them. Adequate screening of the entire proposed 65-acre site may not be possible. If total vegetation clearing is required to meet fire and other requirements, the site may not meet visual quality objectives.

Product Transport

Transport of fluids and gases by pipeline would result in less visual impact than would trucks. The wider pipeline disturbance could be mitigated through proper shaping (vegetation clearing) and revegetation. The visual impact of the large transport trucks cannot be mitigated. Pipeline transport also normally requires fewer storage structures and thus less visual intrusion.

Agency Preferred Alternative

This alternative would minimize visual impacts by precluding construction of a plant within the Lucky Ditch Unit.

No Action

Selection of the No Action alternative would prevent the potential of a major visual intrusion in the form of a processing facility. Storage facilities would continue to be necessary for existing wells in the area.

Impacts from Utah Proposals

Development of Utah proposals would occur within or adjacent to areas of existing oil and gas field development, so that little net change to visual resource character would result.

Transportation Systems

Specific Impacts to Transportation Systems

Full Field Development Alternatives

It is anticipated that road density levels on National Forest lands would be exceeded with full field development for all alternatives except No Action, if closures were not also implemented. Table 4-4 illustrates proposed and alternative road additions.

On forest land, surface road mileage would increase by 22.7 miles with the proposal.

TABLE 4-4
ADDITIONS TO TRANSPORTATION SYSTEM¹
(By Alternative)

Surface Manager	Proposed Action		Collector Alternatives			Preferred Alternative	
	Collector	Local	(1)	(2)	(3)	Collector	Local
Forest Service	11.43	11.27	11.43	11.43	13.33	11.80	11.27
BLM/State/Private	16.09	23.45	15.09	17.09	16.09	15.50	23.45
Total	27.52	34.72	26.52	28.52	29.42	27.30	34.72

¹ Wyoming lands only.

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Mitigation of road density impacts (see Wildlife Section) would include closure and obliteration of existing primitive roads, and Supervisor's Closure of the area. A Supervisor's Closure would restrict vehicle travel in the area to designated (collector) roads. Traffic on nondesignated roads (as well as off-road travel) would be prohibited and emphasized by gating. This closure would be

year round and would prohibit all off-road vehicle traffic. Vehicular public access to the National Forest portion of the area would be substantially curtailed, although foot and horseback traffic would still be allowed.

Net effect to road density is illustrated in Table 4-5.

TABLE 4-5
ROAD INCREASE AND DECREASE
EFFECTS ON ROAD DENSITY
WITHIN THE NATIONAL FOREST
PORTION OF AREA¹

Description of Roads	Specific Mileage	Total Miles
Existing forest inventory open roads	32.0	—
Existing open primitive roads (Forest Road Density = 2.8 miles/square mile)	42.7	74.7
Proposed collector roads on forest	11.4	—
Proposed local roads on forest	11.3	97.4
Closure of all existing primitive roads (Forest Road Density = 2.1 miles/square mile)	-42.7	54.7
Additional supervisor's closure local roads (Forest Road Density = 1.65 miles/square mile)	-11.3	43.4
Added supervisor's closure collector roads (Forest Road Density = 1.2 miles/square mile)	-11.4	32.0

¹ Total study area is 70 square miles; National Forest surface is 26.3 square miles. This includes Wyoming lands only.

Because roads existing and to be constructed on BLM, state, and private managed surfaces do not fall under any existing road density restrictions, no additional mitigation would be required, except as generally apply to construction and use, and specifically apply to protect other resources (see Appendix B). Roads to be constructed over private and state land would not automatically provide public access to or through the study area, although agency personnel would require access to regulate oil and gas activities.

No Action

Curtailment of field development at this time would leave the area with many miles of different types of roads. Access for the public would be readily available on the National Forest portion,

except as currently excluded on recent oil and gas roads. Access to BLM-administered public lands would remain difficult.

Cumulative Impacts on Transportation Systems

Authorization for other road users would be limited on the forest. Access to public land portions of the study area would not automatically improve. Access to the area for salvage timber sales would be made available, under timber sale guidelines.

Road construction, coupled with obliteration of some primitive roads and Supervisor's Closure of other roads, would severely restrict public access within the forest portion of the study area. Access restrictions would limit public access to the public land portion. Remaining available roads would be of a generally higher standard than currently exist.

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Impacts from Utah Proposals

New well access roads constructed within the Flash Unit would be located within the Cottonwood Mountain RMU and be subject to road density standards. Other primitive roads may be closed, or these new roads may be gated, in order to meet road density standards.

Vegetation

When a well is determined nonproductive, or with the completion of each construction process (well pad, road, pipeline, or plant), the disturbed area not further needed would be recontoured, topsoil or other suitable soil material would be replaced, and the area would be reseeded.

Timber Type

General Impacts on Timber Vegetation

Full Field Development Alternatives. Certain timber species would not successfully regenerate within 10 to 20 years even with proper reclamation practices. Therefore, the following species would be reduced by the following acreages: Douglas fir, 12 acres; and Engelmann spruce, 38 acres. Lodgepole pine is expected to be severely affected by the encroaching mountain pine beetle epidemic, regardless of which alternative is selected.

No Action. Approximately 38 acres of vegetation would be disturbed in the short term by previously permitted construction activities. Selection of the No Action alternative would prevent additional well field activities that could cause additional disturbances of vegetation in the study area. The mountain pine beetle epidemic would continue to affect lodgepole pine in the area, and other surface disturbing activities such as timber harvest would continue as well.

Range Type

General Impacts on Range Vegetation

When rangeland within the study area is stabilized by plant growth under proper range management, a trend toward the natural condition would result. The rate of this trend is dependent on the condition of the soil, species mixture seeded, intensity of management, and climatic conditions. Areas receiving proper revegetation practices, grazed under sound range

management principals and with average climatic conditions for the area could approach predevelopment production on specific range sites within 3 to 5 years.

Threatened and Endangered Species

General Impacts on Threatened and Endangered Species

Thelesperma pubescens, the sensitive plant population in the study area, is not expected to be impacted by field development. Stipulations to assure identification of the species if present, prior to surface disturbance would be applied. This would prevent disturbance, or provide for mitigation of disturbance to this sensitive species.

Impacts from Utah Proposals

Vegetation in the Utah portion of the proposal is similar to that in the Luckey Ditch Unit within the study area. Approximately 17 acres would see new disturbance. The conifer/aspen vegetation groups would be most likely affected.

Recreation

General Impacts on Recreation

Oil and gas activities have the potential to impact all of the study area's recreation activities. These impacts would be beneficial or detrimental, depending upon the recreational activity.

Prolonged periods of noise, long-term visual intrusions, and odors reduce the quality of the recreational experience. Within oil fields, hazards such as noxious fumes, heavy equipment, and potentially hazardous chemicals are present. These factors and site occupancy by oil and gas structures would eliminate recreation use from portions of the study area. Increased traffic due to oil and gas vehicles would detract from most of the existing recreational uses.

Oil and gas development and associated vehicle use would change existing recreation use and patterns. Oil and gas activity assures open collector roads in winter which may increase opportunity for snowmachine use due to better access to snow play areas. Increased opportunity for cross-country skiing and Christmas tree gathering would also occur. Associated road closures, primitive and local, may improve the hunting experience for those who hunt on foot or horseback.

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New collector access roads, if open to public travel, would be particularly beneficial to hunters where access was previously limited. However, in areas where adequate access already exists, increased access may be detrimental to the quality of the hunt. Animals may be displaced by oil and gas activity thereby reducing the number available for hunting in a particular area. This would create an overall adverse impact to hunting in this area.

As more jobs are created by oil and gas activity, the number of people using an area for recreation would increase. This increased use would detract from the quality of a recreation experience for many recreation activities.

The impacts on recreationists during the production phase of oil and gas activities are caused by pipeline construction and installation of production facilities such as storage tanks. Construction of pipelines and facilities provides increased vehicular access, noise pollution, and visual intrusions. During construction, pipelines may create a temporary barrier to off-road travel and could pose a temporary hazard to recreationists.

Once oil and gas activities from the exploration phase through the production phase are completed, activities associated with abandonment would improve the recreational experience. Access oriented recreationists would be able to use the roads already constructed. Recreationists would be able to enjoy areas which once contained oil field equipment and have since been returned to a more natural environment. Loss of roads, due to rehabilitation, may not be well accepted by the access oriented recreationist. If use of the rehabilitated roads continue, such use would constitute a residual impact.

Specific Impacts on Recreation

Collector Road Alternatives

Existing Collectors Only (1). Confining oil and gas traffic as well as recreation traffic to existing roads would have the greatest adverse impact on recreation travel opportunities. The least impact on recreation travel opportunities would occur with industry access on the Reed Ranch road and Sun #2 to Sun #1 road which would substantially reduce traffic in the western portion of the study area. Recreation opportunities would be reduced in the eastern portion of the study area by preventing loop or through travel. Impacts on other types of recreation opportunity would change little between road alternatives since development would spread over the entire study

area. All primitive roads on the National Forest would be closed.

Taylor Ranch to Whiskey Springs Tie (2). This alternative would not change recreation opportunities from that which would occur with the Proposed Action.

Whiskey Springs North Access (3). Routing oil and gas traffic past Texaco 13 to Road 72 in the Whiskey Springs Unit would reduce the impact on recreation travel opportunities in the western portion of the study area.

Production and Processing Plant Alternatives

Lucky Ditch Units (1), (2), and (5). Processing plants which occupy large acreages (greater than 8 to 10 acres or about a city block) are inconsistent with the roaded natural recreation opportunity objective of the study area. However, centralizing plants would be desirable since fewer areas are impacted for recreation use. The presence of a very large plant site (perhaps over 40 acres), though, becomes unacceptable to the recreating public and they would avoid the area. Therefore, the Lucky Ditch plant site would be constructed in phases to be sure that size in excess of needs does not occur.

Whiskey Springs Unit (3) and Taylor Ranch Unit (4). These alternatives would have less impact on recreation than the Proposed Action. Recreation use would be disrupted on two fewer sites and fluid truck traffic would be confined to fewer miles of road.

Product Transport Alternative

Pipeline transport would reduce the sight and sound impact to the recreating public, compared with the Proposed Action. Traffic hazards would also be reduced.

Agency Preferred Alternative

General impacts on recreation would be incurred under all full field development alternatives, including the agency preferred alternative.

Centralization of hydrocarbon processing at the existing Phillips plant would create the minimum in additional impacts to recreation, as existing location and existing employees would take care of considerable new processing needs.

The agency Preferred Alternative would create reduced access between the west and east halves of the area, when compared with the Proposed Action. Substantially reduced truck traffic would

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alleviate much of the full field development impacts on recreation.

No Action

Selection of the No Action alternative would cause no change in the existing recreational opportunities within the study area. No additional roads would be made available for recreational traffic. Existing well field activity would continue, however, as would existing conflicts.

Impacts from Utah Proposals

Since oil and gas production and processing presently occur in the Utah portion of the proposal area, little added impact to recreational activity would occur.

Livestock Grazing

No significant impact is anticipated to the livestock industry and rangeland vegetation. A rangeland monitoring program would be implemented following the completion of this EIS to verify the intensity of impact on the resource and livestock industry.

Specific Impacts on Livestock Grazing

Proposed Action

Production and Injection Wells. The 56 production wells and 14 injection wells proposed within the study area would disturb an area of about 5 acres each. This would result in a cumulative disturbance of 350 acres.

Access Roads. The proposed collector and spur roads would remove vegetation production throughout the drilling and production phases of the oil and gas field. These roads would be returned to the prefield development condition during the field abandonment phase (except those existing or new roads determined able and necessary to provide continued use to the public). Therefore, vegetation production would be regained on these linear sites in the long term.

Improved access to the study area through upgraded collector and local roads would increase the potential for private, or industry, vehicle collisions with livestock.

Production and Processing. Fencing of the plant sites would preclude the availability of residual and revegetated forage within the enclosures to livestock for the life of the project (20 to 30 years).

Pipelines. Along the continuous zone of construction, livestock could be inhibited from accessing water and preferred forage locations. This impact would be partially resolved through the placement of soil "plugs" at intervals along open ditches.

Vegetation production would be lost for 2 growing seasons after the pipeline disturbance is reseeded.

Trucking of Oil Products. A total of 60 truck trips daily could cause livestock to be injured or killed due to accidental collisions.

Power Source. The installation and operation of electrical power transmission lines would cause a negligible impact on the range resource and livestock operations.

Abandonment of Operations. When the useful life of the field and facilities is encountered, or should a well be nonproductive, the rangeland resource would be restored.

Table 4-6 indicates the rangeland production in animal unit months (AUMs) that would be lost due to full field development (access roads, pipelines, well pads, and plant sites).

Adjustments to the level of livestock use on public land (increase or decrease in permittee grazing preference) would only be determined through a cooperative rangeland monitoring effort between all affected parties.

Production and Processing Plant Alternatives

Lucky Ditch (1). This alternative would locate Sun's original proposed location for a processing plant within a range improvement. This site has been irrigated by the permittee for a number of years. Location of the site here would remove 65 acres of highly productive land from this allotment, which could result in a loss of grazing potential. From 4 to 30 potential AUMs would be removed from production.

Lucky Ditch Unit (2) and (5), Whiskey Springs Unit (3), and Taylor Ranch Unit (4). These alternatives would have little difference in impact from those processing plant sites described in the Proposed Action. Concentration of processing activities into fewer plants would reduce required truck traffic, in terms of the number of routes used by oil trucks, and therefore would reduce traffic hazard to livestock.

Product Transportation Alternative

Use of pipelines for oil and condensate transportation would further decrease the

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TABLE 4-6
POTENTIAL LIVESTOCK FORAGE LOSS¹
(AUMs)

Allotment Number	Proposed Action	Component Alternatives								Preferred Alternative
		Collector Roads			Processing Plants					
		(1)	(2)	(3)	(1)	(2)	(3)	(4)	(5)	
1425	7.0	—	—	—	—	—	—	—	—	7.0
1441	0.5	—	—	—	—	—	—	—	—	0.5
1449	11.0	—	—	—	—	—	0.5	0.5	—	11.0
1454	0.5	—	—	—	—	—	—	—	—	0.5
4013	15.0	—	—	—	—	—	—	—	—	15.0
4014	6.0	—	—	—	4.0	4.0	—	—	—	2.0
4015	4.0	—	—	—	—	—	—	—	—	4.0
4016	1.0	—	—	—	—	—	—	—	—	1.0
4017	2.0	—	—	—	—	—	—	0.5	—	2.0
9001	23.0	—	—	1.0	—	—	2.0	—	4.0	26.5
Total	70.0	—	—	—	—	—	—	—	—	69.5

¹ Short-term loss, based on average stocking rate of 16 acres per AUM.

potential for collisions between trucks and livestock, thereby reducing potential death and injury loss.

Agency Preferred Alternative

Generally, impacts under the Preferred Alternative would be the same as full field development impacts under the Proposed Action; except reduced traffic hazard to livestock from substantial reduction of truck traffic.

No Action

Selection of the No Action alternative would prevent additional loss of forage and increased risk to livestock that would result from field development.

Impacts from Utah Proposals

An additional 3 or 4 AUMs could be lost from Utah proposals, within allotment 9001.

Timber Management

Lodgepole pine and other timber species within the study area would be removed from production

for the life of the project facilities. However, the present stands are currently in jeopardy from the mountain pine beetle epidemic already present in the area. Oil and gas field development would have minimal additional effect on the timber base in the study area.

Specific Impacts on Timber Management

Proposed Action

Well Sites. Each producing well site in the timbered area would take approximately 5 acres of timber out of production which would remain out of production for a period of 20 to 30 years. At present, the average stand of timber (mature timber, stagnated post and pole stands, and young timber) contains approximately 5,000 board feet per acre.

Access Roads. Use of existing roads and upgrading of existing roads would have minimal impact on timber production, although the expanded road system would be available to authorized commercial timber sale recipients.

Production and Processing. Texaco's proposed production sites would be located in mixed aspen and lodgepole pine stands (30 acres would be affected). However, the entire area is facing the

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beetle epidemic, and much of this timber would be lost even without field development.

Table 4-7 displays the acreage per timber type anticipated to be disturbed under the proposed action within Wyoming.

Product Transport. Pipelines that would be buried in the roadway, in the borrow area, or along existing pipelines would have only minor additional impact on timbered lands.

Disturbed timbered land adjacent to existing roads and pipelines would remain out of production for the life of the development, and until they were regenerated into timber production. Any additional pipelines would be confined to the construction right-of-way which would disturb 8.48 acres or less, per mile.

TABLE 4-7
TIMBER TYPES AFFECTED AND ACRES
DISTURBED BY ALTERNATIVE¹

Timber Type	Proposed Action	Component Alternatives									Preferred Alternative
		Collector Roads			Processing Plants						
		(1)	(2)	(3)	(1)	(2)	(3)	(4)	(5)		
Aspen	60	—	2.0	1	—	—	—	—	—	56	
Douglas Fir	12	—	—	—	—	—	—	—	—	12	
Spruce/Fir	38	—	—	1	—	—	—	—	—	39	
Lodgepole Pine	186	—	0.5	2	—	—	36	—	65	192	
Total	296	0	9.5	9	65	65	36	0	65	299	

¹ Within Wyoming only.

Production and Processing Plant Alternatives

Lucky Ditch Unit (1) and (2) and Taylor Ranch Unit (4). These alternative locations are outside of timbered areas.

Whiskey Springs Unit (3). In this alternative, 30 acres of productive mixed aspen and lodgepole pine timber sites would be disturbed. This is the same as in the Proposed Action.

Lucky Ditch Unit (5). With this alternative plant location, approximately 65 acres of lodgepole pine would be cut and removed from production for the life of the development period. (Once companies purchase timber, it would be removed in accordance with FS authorization and disposed of by the companies, as they see fit.)

Agency Preferred Alternative

The agency Preferred Alternative would have essentially the same impacts on timber management as would full field development under

the Proposed Action. Approximately 251 acres of timber would be cut in the short term, and would not return to precut age classes before the end of the life of the field.

No Action

Selection of the No Action alternative would preclude the removal of timber due to field development. The mountain pine beetle epidemic would continue to kill mature and overmature trees in the area. Timber salvage sales would be used to remove some of the dead trees. However, lodgepole pine is an early succession tree that is extremely hardy and readily propagates on a large variety of sites.

Impacts of Utah Proposals

Approximately 15 acres of conifer/aspen vegetation could be removed.

ENVIRONMENTAL CONSEQUENCES

Fisheries

General Impacts on Fisheries

Sage Creek Fishery

Sage Creek is an important spawning and rearing stream for the cutthroat trout. These fish may be the Colorado River cutthroat trout, classified as "sensitive" by the WGFD. Sage Creek possesses suitable habitat for this fish, and a plan is being prepared by the WGFD to address the management of the habitat and fish populations in Wyoming. Oil and gas construction activities within the vicinity of Sage Creek (proposed access roads cross Sage Creek several times) threaten to reduce the streams ability to maintain the fish populations, and could preclude the future use of this stream as a Colorado River cutthroat trout fishery. The actual impacts would include increased sedimentation to streams from construction activities in or near drainages. Most of these impacts would be precluded by mitigating measures.

Louse Creek Fishery

Louse Creek is an established brook trout fishery utilizing many beaver ponds along the drainage for resident over-winter survival of the fish. Development of oil and gas facilities in the area threaten the continued existence of this fishery due to risks of additional sediment loading and of hydrocarbon spills.

Henrys Fork River

The Henrys Fork River is also a cutthroat trout fishery and harbors the sensitive Colorado River cutthroat trout. The U.S. Fish and Wildlife Service is concerned that depletions of water from the Green River system may impact downstream habitat for the Colorado squawfish, boneytailed chub, and humpback chub; however, no proposals request using Henrys Fork, or its tributaries, as water sources.

Any crossings of the Henrys Fork River shall require construction of a bridge. If necessary to construct a bridge, it would not be done during the cutthroat trout spawning run (from April 15 through July 10). Where access roads must cross Louse Creek, an arch-type culvert or bridge must be constructed.

Specific Impacts on Fisheries

Proposed Action

If construction of roads, drill sites, pipelines, and other facilities is not allowed to take place within 500 to 660 feet of live water, and avoids riparian areas, there should be little impact on the present fisheries and potential future fisheries.

Probably the biggest threat to the aquatic environment is the risk of spills (which have already occurred with present levels of development). Strict adherence to safety and operating regulations must be maintained to insure against oil and oil product spills which could destroy aquatic and riparian habitats.

The proposed roads to Texaco #9 and #11 wells would cross Sage Creek. This action would cause aquatic and riparian habitat destruction (at least in the short term), and would reduce the stream's ability to maintain fish populations. Mitigation would preclude these crossings in order to protect fisheries.

Two road crossings already exist along Louse Creek and at least three more are proposed. These crossings should be avoided, or if access roads must cross Louse Creek, large arch-type culverts or bridges should be constructed.

Collector Road Alternatives

Existing Collectors Only (1). By limiting disturbance and precluding a crossing of Henrys Fork River in this alternative, impacts on aquatic and wetland habitats are minimized. This alternative is similar to the Proposed Action.

Production and Processing Plant Alternatives

Luckey Ditch Units (1) and (2). These alternatives would have greater impacts than the Proposed Action on wetlands and fisheries, as the plant site would be located nearer to the Henrys Fork. Greater volumes of oil and gas would be transported across the Henrys Fork via pipeline. The opportunities for accidental petroleum spill into the Henrys Fork would be greater.

Product Transport Alternative

Short-term habitat losses would occur where pipelines cross streams. However, with proper placement, minimum vegetative and streamside

ENVIRONMENTAL CONSEQUENCES

disturbance, and monitoring, pipeline crossings would have no long-term adverse impacts. Pipelines would reduce risk of spills below the risk inherent with maximal truck transport of oil.

Agency Preferred Alternative

Potential impacts to fisheries from implementation of full field development would be less under the agency Preferred Alternative than under the Proposed Action due to: preclusion of a road crossing at Henrys Fork; preclusion of the plant in the Luckey Ditch Unit; and piping, rather than trucking of oil products. However, the risk of hydrocarbon spills and introduction of sediments to streams would be the same.

No Action

This alternative would have least impacts on fisheries simply because no additional development would occur across or adjacent to aquatic habitats.

Impacts from Utah Proposals

The existing Phillips plant would see expansion that would be close to the Henrys Fork River. Attention to construction of the site, including zero runoff discharge, would mitigate these impacts. Risk of incidents of accidental discharge of hydrocarbons would be the greatest threat to fisheries. However, the Phillips plant site has not had any spills in the last 20 years.

Social and Economic Environments

General Impacts on Social and Economic Environments

Full Field Development Alternatives

Socioeconomic impacts could be considered significant if changes in the indicators were 5 percent or more. The primary indicators are population, employment, and income.

The maximum number of new wells planned for this area is 70. It has been estimated that no more than 7 drilling rigs would be operating at one time and the number of wells developed in a single year would not exceed 20. On this basis, the developmental phase would last approximately 5 to 10 years which would minimize adverse socioeconomic impacts in the area. On the

beneficial side, construction and long-term operation of the developed field would utilize goods, services, and labor already available in the county.

Company workers travel from main offices in Denver or other cities; and when visiting the study area, rely on local accommodations. Constructing, drilling, and pipeline contractors and crews may already reside in local communities, or may commute from outlying larger communities such as Evanston or Rock Springs. Local communities, such as Mountain View, Lyman, and Manila, have the facilities to support the limited transient population that would be associated with the drilling and construction crews.

Construction crews required for pipeline and processing plant construction would represent the greatest number of persons that could impact the area at any one time. Crews for pipelines of up to 10 persons per shift (2 shifts per day) would be needed, and for the largest plant (Luckey Ditch) there could be up to 20 persons employed. Maximum employment required to operate 5 drilling rigs at one time is 125 individuals. These employee impacts would last from 2 to 6 months. Maximum short-term employment would be approximately 150 to 200 persons at any one time. This represents between 1 and 2 percent of the currently employed labor force in the county. Measurable impacts, if any, would be at the local level.

The number of people needed when the wells are producing is less. On the basis of 70 wells being developed and 1 person serving 5 wells, the additional employment in the production phase is only 15 people. Seven hydrocarbon production and processing plants are proposed for the area, with maximum development. Plant site employment needs would vary by company. Construction of some production plants, particularly for Whiskey Springs Unit and Taylor Ranch Unit, would be delayed until wells are drilled to create a need. This would delay some of the construction personnel needs.

Other alternatives considered relate to various options of corridor access, location of proposed processing plant sites, and product transportation. Development and/or operation costs would be higher than with the Proposed Action but would not significantly increase employment in the area.

The impacts associated with the agency Preferred Alternative would be less than the Proposed Action, because the major new plant would not be constructed.

ENVIRONMENTAL CONSEQUENCES

The relatively small number of jobs created by well development in this area would not adversely impact county socioeconomic structure. Full field development would include new wells, treatment plants, pipelines, access roads, and electric lines. Development would create both temporary and permanent employment, primarily from existing residents in the county. This would increase revenues to local merchants through added sales and services and substantially increase the tax base due to mineral royalties, severance taxes, and property taxes on ancillary facilities.

Some loss in area receipts would result from substantially decreased hunting opportunity.

No Action

This option would deny full field development by preventing any additional wells, processing plants, or pipelines from being developed. Existing wells and the well currently being drilled would be allowed to continue operating. With no additional increases in employment, there would be no positive socioeconomic change or consequences in the local area. Employment associated with the well being drilled would be lost once the well is completed.

Adverse economic impacts on the oil companies would occur with no additional wells or processing plants being developed. Approximately 17 percent of the planned number of wells are currently developed (13 of 78). Assuming each well produces equally, the potential loss to the oil companies is 80 percent of what they would realize from full field development. This would undoubtedly result in some of the companies being forced to halt operations in the area. This loss of potential income would adversely affect the local economy with the greatest impact being loss of potential (i.e., foregone employment mineral royalties, severance taxes, and property taxes).

Impacts from Utah Proposals

Employment impacts would not change with addition of proposals from Utah. The state share of royalties from Flash Unit wells would accrue to the state of Utah.

Cultural Resources

General Impacts on Cultural Resources

The proposed field development would create up to 1,264 acres of new disturbance. About 15

acres, 2 wells, and portions of 7 proposed roads would cross existing inventoried cultural sites: UT1023, UT693, UT1044, UT1009, and UT1022.

Other portions of the proposal may overlie important cultural resources not yet known and require mitigative measures. The relatively high site occurrence in the area, one site every 48.6 acres, indicates that as many as 26 new sites could be discovered with full field development. The known and projected cultural resource potential in the study area warrants special treatment by land management agencies.

A treatment plan for cultural resources would be written and implemented by the agencies. This plan would address how cultural resources are identified and evaluated. It would also address how adverse effects to significant cultural resource would be mitigated in the event they could not be avoided. This comprehensive treatment of cultural resources would expedite agency response to APDs, ROWs, and SUPs.

Paleontological Resources

Specific Impacts on Paleontological Resources

Proposed Action

Twenty-four wells are proposed to be located on outcrops of the Bridger Formation, which is often host to vertebrate fossils. These wells could disturb up to 120 acres of the Bridger Formation. Eleven miles of proposed access road would be located on the Bridger Formation. Three proposed hydrocarbon production and processing plants and 16 miles of pipeline are also proposed to be located on the Bridger Formation for a total of 318 acres of Bridger Formation that would be affected by development.

As a result of proposed field development, additional paleontological information may be discovered. Stipulations to prevent or mitigate disturbance of paleontological resources would be applied.

Elevated powerlines would not disturb the paleontological resources, nor would the abandonment and reclamation of previously disturbed sites.

Processing Plant Alternatives

Whiskey Springs Unit (3). The site in section 29 would have less potential for impacting paleontological resources than the original

ENVIRONMENTAL CONSEQUENCES

proposed action. The site in sections 36 and 1 would not impact paleontological resources.

Taylor Ranch Unit (4). The plant locations in sections 1 and 3 of T. 12 N., R. 114 W., would have no impact on paleontological resources. The site in Sec. 35, T. 13 N., R. 114 W., would be located on the Bridger Formation and could potentially impact these resources.

Agency Preferred Alternative

Six fewer acres of Bridger Formation would be disturbed with full field development using the agency Preferred Alternative, than with the Proposed Action.

No Action

No additional impacts would occur on paleontological resources. No additional paleontological resource information would be discovered.

Health and Safety

General Impacts on Human Health and Safety

Full Field Development Alternatives

With implementation of stipulated safety measures, proposed field development in itself should create no undue health and safety hazards. Even with road hazard signing and posted speed limits, some hazards from oil field traffic mixing with recreational, rancher, and timber harvest traffic may occur.

Field development would bring a number of additional persons into the study area over the next 5 years and more. With the imminent increase in wildfire hazard because of the mountain pine beetle epidemic, additional persons and property may be at risk. This risk may be reduced after a period of time, with planned timber harvest (salvage and fuelwood).

In addition, road and travel hazards due to potential mass movement along rights-of-way, would subject persons and property to risk during initial and subsequent slope failure.

Both the product transport component alternative and the agency Preferred Alternative would

reduce impacts that would occur with the Proposed Action by substantially reducing company truck traffic, and associated hazards, on area roads.

No Action

Even without proposed field development, wildfire hazard is expected to increase because of the mountain pine beetle epidemic. Existing oil and gas production personnel, as well as other forest users, are at risk. Mass movement of soil and existing levels of oil field traffic are hazards as well.

Air Quality

According to Wyoming Department of Environmental Quality's (DEQ) Permit Application Analysis for Sun's sweet gas liquids extraction plant, the pollutant of concern from the proposed facility is oxides of nitrogen (NO_x), which in sufficient concentration can result in or contribute to the formation of smog. Nitrous oxides have also been identified as contributors to acidic deposition, an issue of concern in Wyoming.

Total NO_x emissions from Sun's proposed facility are estimated at 68.9 tons per year. At this relatively low emission rate, DEQ anticipates no significant impacts to air quality.

At 68.9 tons per year, NO_x emissions and 42.6 tons per year of carbon monoxide emissions, this is not considered to be a "major emitting facility," and analysis under the Prevention of Significant Deterioration section is not required.

No impact beyond what is allowed within Class II areas, which allows for emissions from industrialization, is anticipated. The area has good natural wind dispersion, so no adverse impact to air quality from full field development is expected.

Geology

Field development in Wyoming and Utah would provide information about available oil, gas and condensate production in subject formations. Natural gas would be removed and some portion would be reinjected into the Dakota Sand Formation, both for reservoir pressure assurance and storage prior to sale. Oil and condensate would be removed from the formation and sold.

ENVIRONMENTAL CONSEQUENCES

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Interrelationships

Field development activities occurring within or near to the study area, that are located outside of federal authority, would contribute additional impacts to those analyzed previously. Specifically, these impacts would be due to: construction and operation of a 65 acre processing plant by Sun, and any construction where mitigation or reclamation measures were not applied.

Short-Term Use Versus Long-Term Productivity

The short-term use of the study area for the production of oil and gas (construction of wells, access roads, pipelines, and processing plants) with implementation of proper methods, mitigation measures, and reclamation practices, would cause the greatest impacts to area resources.

The long-term activities proposed for the field such as collector roads, plants, and production facilities would slightly reduce the amount of vegetation productivity for the life of those facilities. Human activity would cause big game to avoid substantial portions of the study area.

It is unlikely that this area would continue to support current population levels of elk, mule deer, or moose in either the short or the long term, unless the No Action alternative is selected. However, as time passes, the adverse impacts to wildlife would be reduced, as animals become accustomed to human activity.

There would be short-term impacts to local communities as a portion of the projects construction (200 workers from out of the area) would briefly use the goods and services of the area. Long-term beneficial impacts would outweigh the short term, as the local tax base would increase from minerals royalty taxes.

Irreversible and Irretrievable Commitment of Resources

Resources that would be irretrievably lost due to field development would include the hydro-

carbon resources that would be transported out of the field and sold for consumption. Renewable natural resources would not be irretrievably lost if proper practices were followed. Any incidents of human-caused landslides or mass movement would irreversibly change the landscape and would result in loss of inherent fertility and productivity of the site. Some amount of supported topsoil and vegetation would be irretrievably lost. Any hydrocarbon spills could damage portions of the environment including water quality, wildlife, or fisheries.

Unavoidable Adverse Impacts

Oil and gas field development would increase the presence of humans in the study area, particularly during the first 5 or so years, as project components are constructed. This increase, in addition to present and anticipated occupancy of the area by hunters, recreationists, woodcutters, and oil/gas company personnel, would reduce the value of the area for wildlife habitat and for recreational purposes.

Approximately 12 acres of Douglas fir and 38 acres of Engelmann spruce would be lost.

Short-term increase erosion would occur on disturbed areas.

The activities of humans would be more evident throughout the study area.

MITIGATION

The stipulations that would be applied to field development operations to ensure that unnecessary environmental impacts do not occur are listed in Appendix B.

MONITORING

Wildlife/Fisheries Monitoring

Baseline wildlife studies began in 1986 in a cooperative venture between the WGFD, BLM, and the four companies originally involved in the field development proposal (Sun, Anadarko, American Quasar, and Diamond Shamrock). Wildlife monitoring for the field development area is to occur in 2 phases.

ENVIRONMENTAL CONSEQUENCES

Phase I

The first short-term phase was primarily funded by the energy companies involved in development of the area. Its purpose was to provide immediate information on current wildlife use of the study area from December 1985 through the summer of 1986. This information was used to prepare the wildlife technical report and portions of this EIS. Phase I objectives were to:

1. Identify and document winter range and parturition areas commonly used by mule deer, moose, and elk in the Uinta-Cedar Mountain herds.
2. Identify specific habitat use areas for each big game species during the winter and parturition time period.
3. Document area used by all other game and nongame species during the same period (raptors, songbirds, mammals, prairie dog towns).
4. Document wildlife, particularly elk, response to oil and gas activities.
5. Determine species composition and distribution of fish, and examine stream habitat quality.

Methodology

Radio-collaring of big game animals and in-field observation of wildlife species were used to gather data.

Phase II

The WGFD is currently funding a special, 2½ year, big game study designed to continue portions of Phase I, documenting crucial big game areas and wildlife responses to some oil and gas development activities. A biological technician is presently employed full-time to collect the information during the entire study period. In addition to the WGFD work, the Utah Division of Wildlife Resources (UDWR) is also involved in the cooperative project and is concurrently monitoring elk movements in response to the development during this study period. The study time period is November 1986 to July 1989. The WGFD funding is \$81,550 for the study. In addition, UDWR will also be providing approximately \$10,000 for aerial monitoring over the same time period. The estimated cost is \$91,550.

Phase III

The work currently undertaken provides only short-term monitoring of developmental impacts on specific wildlife species in the area. An adequate long-term program designed to monitor changes in the wildlife and fishery populations of the study area must be implemented. This information will be used to detect wildlife/development conflicts as they arise and to guide any needed mitigation.

Anticipated potential impacts would be expected related to disruption of big game use of seasonal ranges and migration routes, loss of wildlife-related recreational opportunity, and loss of aquatic and other nongame wildlife resources. The current project only addresses big game species response during a short period of time. Monitoring of developmental and production phase impacts on aquatic resources is not addressed. An adequate data base for raptor species is not yet available to identify crucial areas for which seasonal and other developmental restrictions apply. The impact to the related recreational resource is peripherally addressed in the WGFD study.

To develop this monitoring package, the BLM designated the present time until the end of 1990 as the field development phase and 1991 and beyond as the field production phase. The timetable for monitoring was developed under this presumption. However, it should be understood that impact-related monitoring would be continued throughout the development period at the presented intensity until that phase is completed. Should economic considerations see development pick up and continue beyond 1990, the monitoring for the development phase would also continue. Once development is completed and field functions are primarily production-oriented operations, then the production phase of monitoring would begin for a 6-year period. The cost of additional years of development phase monitoring would be added to the presented budget.

The components of Phase III include the following:

Raptor Nest Search

For each activity planned, onsite inspections will include search for raptor nests. This will allow proper application of seasonal avoidance stipulations around raptor nests.

ENVIRONMENTAL CONSEQUENCES

Winter Big Game Distribution

Two flights each winter with a fixed-wing aircraft will monitor changes in numbers and distribution of pronghorn antelope, mule deer, elk, and moose during the development phase of the project. Flights will be flown yearly during development and every 2 years of the production phase for the first 6 years. Monitoring will be done initially in 1989, 1990, and 1992.

Elk Calving and Big Game Spring Migration Surveys

Each spring a fixed-wing aircraft will be used to monitor big game movements leaving winter ranges and parturition area use. These data will identify whether historical big game migration routes and elk calving areas are being disrupted by development or other factors. Production phase monitoring will identify big game response to the drop and change in the activity level in the area.

Surveys will be done in early May and June each year during the development phase and every 2 years of the first 6 years of production. Monitoring will be done initially during 1990 and 1992. The estimated cost of aircraft use and personnel would be approximately \$2,162 per year. Addition monitoring would be done as determined necessary.

Recreation Monitoring and Additional Enforcement

Oil and gas associated activities may significantly impact the quality and quantity of hunting in the area while escalating illegal game kills. To monitor these impacts, the WGFD will hire 1 additional technician in October 1987 and 2 technicians during October 1990 to survey changes in hunter use of the area through the development period and supplement game law enforcement during the October hunting seasons. Field interviews will be supplemented by follow-up telephone surveys of area hunters.

Fish Population Estimates

Fishery population estimates on Sage Creek and Henrys Fork River will be made in 1988 and 1990 during the development phase. Estimates will also be made in 1993 and 1996 during the production phase.

Macroinvertebrate Surveys

Macroinvertebrate studies, designed to monitor invertebrates (such as insects, snails, etc.) that inhabit streams and are indicative of changes in sedimentation of streams that effects fisheries, will be accomplished as described under watershed monitoring.

Trout Habitat Surveys

Any changes would be monitored at predetermined stations on Sage Creek and the Henrys Fork River. Parameters measured will be bank erosion and trout cover using habitat quality index (HQI) methods (Binns 1979). Three stations will be monitored on Sage Creek and one station will be monitored on the Henrys Fork River, annually, during the development phase. Measurements will be made in 1993 and 1996 during the production phase.

Watershed Monitoring

The Proposed Action plan calls for numerous roads, pipelines, oil and gas wells, and processing plants which have the potential to adversely effect water quality.

A baseline water quality study was initiated in May 1986, with samples taken again in July and September. This initial sampling was jointly funded by BLM and industry. Although hydrocarbon production began prior to this study, and some evidence of this activity was present in water samples taken during 1986, this baseline study will be used as a measure against future activities and their effects to water quality.

Purpose

The objective of this water quality monitoring plan would be to:

1. Insure that surface water is not impacted by high suspended sediment loads during and after the construction phase of this project.
2. Monitor the water quality of the Bishop Conglomerate aquifer, to insure that downhole activities are not impacting the ground water.
3. Insure that the macroinvertebrate populations are not significantly changed during and 2 years after the construction phase of this project.

ENVIRONMENTAL CONSEQUENCES

Methods

Surface Water

Considering the current plan of development, most of the surface activity of public lands will involve the Cottonwood Creek, Louse Creek, Sage Creek, and Henrys Fork watersheds. Therefore, 4 monitoring stations will be set up, one on each of the streams shown on Table 4-8.

The first measurement taken at these stations will be visual, to measure the turbidity of the water. The intent here is to insure that large and unnatural suspended sediment loads will be noted and acted on as soon as possible. This will require a surface compliance officer to visit each of the 4 sites at least biweekly during the construction phase of this project and during the operational phase as necessary.

The second measurement will be a total macroinvertebrate count and a population diversity determination. The premise for using this type of measurement is that past experience has demonstrated the make up of the macroinvertebrate population responds to changes in water quality rapidly.

The macroinvertebrate measurement will be taken once a year during the fall for the duration of the construction phase and after, as determined necessary. This measurement will involve taking 3 replicate samples at each station and transporting them to a laboratory for analysis.

Ground Water

The major fresh water aquifer in the Hickey Mountain - Table Mountain project is the Bishop Conglomerate which feeds several springs in the area. In order to determine whether this aquifer

TABLE 4-8
WATER QUALITY MONITORING STATIONS

Stream	Legal Description
Cottonwood Creek	T. 13 N., R. 115 W., Sec. 35 SENW
Sage Creek	T. 13 N., R. 114 W., Sec. 20 NESE
Louse Creek	T. 12 N., R. 114 W., Sec. 10 NWSE
Henrys Fork	T. 12 N., R. 114 W., Sec. 21 SENW

is being impacted by hydrocarbon exploration, a grab sample will be taken at Big Spring and Whiskey Spring on an annual basis during the first 2 weeks of October. The legal descriptions of Big Spring is T. 13 N., R. 115 W., Sec. 25 NWSE and Whiskey Spring is T. 13 N., R. 115 W., Sec. 36 NWNW.

These 2 springs were chosen to represent the water type in the Bishop aquifer because they are very productive and are hydrologically located at the lower end of the Bishop Conglomerate.

Water samples from these springs will be analyzed for phenols, oil and grease, chromates, and total dissolved solids. This would involve taking several different samples with different preservatives (Table 4-9). These samples should be taken and placed in a cooler and transported to the laboratory the same day.

Future Evaluation

Evaluation of this monitoring plan will be done in 4 years to determine if it should be continued or accelerated. This evaluation will be based on the current and projected development, or other disturbance related situations, existing at the time. Additional evaluation of all resource monitoring will occur in the implementation task force annual reports.

Soil Erosion Monitoring

Soil erosion monitoring within the study area will be accomplished through review of reclamation efforts and assessment of human-caused mass movement (that which has taken place after, or due to developmental disturbance).

ENVIRONMENTAL CONSEQUENCES

TABLE 4-9
GROUND WATER SAMPLING

Sample Constituent	Sample Size (ml)	Container Type	Preservative Type	Amount (ml)
Phenol	250	nalgene	HPO ₄	0.10
Oil and Grease	1,000	glass	HC1	5.0
Chromium	250	Nalgene	HNO ₃	1.0
Total Dissolved	250	Nalgene	NA	—

Within the first 2 growing seasons after initial disturbance, an interdisciplinary team (ID team), consisting of industry and agencies, will review reclamation efforts and mass movement (associated with disturbance) to identify problem areas. After the second growing season following initial reclamation efforts, the ID team will determine significant problem areas that may exist, based upon review of goals and factors identified in the reclamation plans. These significant areas will receive additional rehabilitation measures and monitoring will be established with a photo point system. The areas, schedule for sampling, and specific sampling systems will be determined by the ID team. This method will provide documentation of progress of stabilization and revegetation efforts, and will be a joint undertaking of agencies and industry.

Mass movement will be monitored throughout the study area through review of baseline aerial photography, updated aerial photography, and by field visits. When mass movement occurs, and is determined to have been caused by development activities, the ID team will review associated erosion problems and develop mitigating measures to stabilize these areas.

Rangeland Vegetation Monitoring

To allow the discovery of a resource problem before it becomes a resource loss, a rangeland monitoring effort will be implemented within the study area. The monitoring will indicate rangeland resource impacts due directly or indirectly to field development.

Two grazing seasons following the completion of this EIS, an ocular reconnaissance of grazeable vegetation in the study area will be conducted to determine rangeland resource impacts. If impacts

are determined or suspected to be present, rangeland studies will be designed to track those changes in vegetation.

The type and intensity of rangeland monitoring studies will be determined according to site specific requirements of the suspected or known impacts and kind of information required.

Additional mitigation measures may be applied to alleviate impacts, and will be determined as appropriate.

IMPLEMENTATION

Purposes and Objectives

Ensure project carried out in conformance with applicable laws, regulations, and specific measures addressed in the EIS.

Provide methodology and responsibility for addressing changes that may occur over the life of the project.

Interagency Task Force

BLM/FS/WGFD/DWR representation Coordination/oversight committee Ensure uniformity of development on various administrative units.

Compliance Personnel

On-the-ground company and agency personnel to provide day-to-day assurance of application proper procedures, mitigation measures.

ENVIRONMENTAL CONSEQUENCES

Annual Reports Presenting

Resource monitoring data and conclusions
Actual development scenarios and effects
Recommendations for future operations/changes
within field development process. Prepared by
November 1 of each year it is required.

INCIDENT CONTROL

Specific authority for repair of incidents that are
sudden in nature or become evident from

resource monitoring studies or annual reports is
generally held by the agency or authority that
issues a permit. The authorizing officer (AO) has
the authority to require measures that would
correct problems in the field.

The implementation task force will aid in
determination and correction of project incidents,
which may include measures such as requiring
cessation of operations until remedies to
problems have been applied. Other measures
may be necessary such as shutdowns of single or
multiple facilities, closure of roads, relocating
structures, removing structures, or additional
reclamation measures.

CHAPTER 5

CONSULTATION AND COORDINATION

In the spring of 1985, it was apparent that there was sufficient activity in the Hickey Mountain - Table Mountain areas to warrant a systematic cumulative analysis of field development. The operators in the affected area were contacted in an effort to determine their development plans. At that time the "field" was not adequately defined, so allowances were made for the companies to drill additional wells to help delineate the field. The private landowners and grazing permittees in the area were also contacted.

SCOPING

On October 18, 1985, a Scoping Statement was distributed to the public to solicit public comment on oil and gas development in the Hickey Mountain - Table Mountain areas. The letter accompanying the Scoping Statement requested comments by November 18, 1985. Approximately 60 copies of the Scoping Statement were distributed. A notice that an environmental assessment was being prepared and that the Scoping Statement was available for comment was published in the *Federal Register* on October 21, 1985. The scoping statement also indicated that, based on the environmental analysis, the federal agencies may determine that an environmental impact statement (EIS) was required. There were 22 responses to the Scoping Statement.

Several coordination meetings were held with the Wyoming Game and Fish Department and the Utah Division of Wildlife Resources. Because the potential impacts to wildlife were an issue which needed to be analyzed in detail, additional data were needed to adequately analyze the impacts to wildlife. A Wildlife Data Needs Analysis was prepared. The Forest Service (FS), Bureau of

Land Management (BLM), and the state agencies met with the companies. Based on the data needs analysis, the companies agreed to provide the state agencies with contributed funds to acquire the needed data.

Several inquiries from Congressional representatives have been received since this environmental analysis began. BLM and FS representatives have also met with representatives of state and local governments.

Numerous meetings were held between the FS, BLM, and the companies to develop the actions to a point where they could be analyzed in this environmental document. The Bridger Valley Electric Association and local communities were represented at some of these meetings. In addition, there has been frequent written correspondence with the applicants.

A Notice of Intent to Prepare an EIS was published in the *Federal Register* on October 6, 1986. News releases announcing availability of the draft EIS and requesting public comment were provided to local media.

DRAFT EIS CONSULTATION AND COORDINATION

The Draft EIS was published in January 1987, and filed with EPA on January 16, 1987. Thirty-three comment letters were received during the 45-day comment period. Copies of these letters and the accompanying responses are shown in Appendix E.

This EIS was prepared by specialists from the Bureau of Land Management and the Forest Service (Table 5-1).

CONSULTATION AND COORDINATION

TABLE 5-1
LIST OF PREPARERS

Name	Responsibility	Qualifications
Bureau of Land Management		
Wally Mierzejewski	Team Leader	BS Environmental Science; 3 years USGS; 3 years petroleum industry; 3 years BLM
Karla Swanson	Technical Coordination, GIS Coordination, NEPA Compliance	BS Range and Wildlands Science; 8 years BLM
Larry Apple	Wildlife and Fisheries	BS Fisheries/Wildlife Biology; 7 years BLM
Chris Butler	Watershed	AA Forestry, BS Watershed Management, MS Forest Hydrology; 3 years BLM
Rick Deuell	Transportation	BS Civil Engineering; 10 years BLM
Jon Dolak	Green River Resource Area Coordinator	BS Forestry and Range Management; 18 years BLM
Tim Murphy	Range, Livestock, and Vegetation	BS Range Management; 5 years BLM
Randy Porter	Paleontology	MS Geology and Geophysics; 2 years BLM
Russ Tanner	Archaeology	BA Anthropology; 8 yrs industry, 2 yrs academia; 1 year BLM
Chester Novak	Soils	BS Forestry/Forest Soil Management; 7 years BLM
Russ Storbo	Recreation, Visual Resources	BS Park Administration; 2 years NPS; 7 years BLM
Chuck Williams	Kemmerer Resource Area Coordinator	BS Range Management; 3 years petroleum industry; 10 years BLM
Vic Wire	Illustrations	14 years industry, 9 years BLM
Terri Mitchell	Cartography	12 years BLM
Robert Lew	Cartography	2 years BLM
Carol Ross	Illustrations	BA, MA Art; 5 years academia, 10 years BLM
Doug Morrow	Photolithography	6 years BLM
Lorrie Jaramillo	Word Processing	7 years BLM
Diana Matozevich	Word Processing	1 year BLM

CONSULTATION AND COORDINATION

TABLE 5-1 (Continued)
LIST OF PREPARERS

Name	Responsibility	Qualifications
Forest Service		
Neil Hunsaker	WCNF Supervisor's Office Coordinator	BS Landscape Architecture; 24 years FS
Bob Cron	Recreation, Visual Resources; WCNF Coordinator (1986-1987)	BS Forestry, MS Parks & Recreation; 25 years FS
Jim Cole	Wildlife, Fisheries	BS Wildlife Management, MS Range Science; 18 years FS
Byron Hoffman	Transportation	BS Civil Engineering; 18 years FS
Melissa Blackwell	Soils	BS Biology, Soil Science minor; 8 years FS
Gary Kappesser	Watershed	BS Geology, MS Water Resources; 2 years teaching water resources & soils, 6 years FS
Thad Horne	Socioeconomics	BS Agricultural Education, MS Agricultural Economics, Ph.D. Agricultural Economics; Research Assistant, Assistant Professor, 10 years FS
Rod Howard	Mountain View Ranger District Coordinator	BS Range Management; 21 years BLM and FS

Mailing List

Government entities and private and public organizations on the mailing list are shown as follows. The State Clearinghouse for distribution to state of Wyoming agencies will be provided with 20 copies of the EIS. Individuals on the mailing list are not shown in this chapter but will be provided with copies of the document.

American Quasar Petroleum Company
Anadarko Production Company
Bridger Valley Electric Association
Bridger Valley Pioneer, Editor
Casper Star Tribune
Celsius Energy Company
Champlin Petroleum Corporation
Chevron USA Inc.
Conoco Inc.
Cranbrook Institute of Science
Dames and Moore
Defenders of Wildlife, Dick Randall
Diamond Shamrock
District 4, Supervisor of Schools, Mountain View
Environmental Research and Technology Inc.

Exxon Company, U.S.A.
Fortune Oil Company
Green River Star, Editor
Heitzman Drill Site Services
Independent Petroleum Association of Mountain States
J. C. Anderson and Sons
Lincoln-Uinta Association of Governments
Lyman Grazing Association
Marathon Oil Company
Mayor of Lyman
Mayor of Mountain View
Medicine Butte Wildlife Association
Mountain Fuel, Rex Headd
Mountain Men of Wasatch
Natural Resources Defense Council
Pacific Power and Light
Petroleum Association of Wyoming
Petroleum Equipment and Suppliers Association
Phillips Petroleum Company
Planning Board, Lyman
Public Lands Institute
Questar Corporation
Rock Springs Rocket-Miner, Editor
Rocky Mountain Oil and Gas Association
Rocky Mountain Oil and Gas Association of Wyoming
Sierra Club, Utah Chapter
Sierra Club, Wyoming
Sinclair

CONSULTATION AND COORDINATION

Mailing List (continued)

State of Utah Planning Office
State Representative, Fort Bridger
Sun Exploration and Production Company
Sweetwater Wildlife Association
Texaco Inc.
The Nature Conservancy
U. S. Representative Dick Cheney
U. S. Senator Alan Simpson
U. S. Senator Malcolm Wallop
Uinta County Commissioners
Uinta County Development Corporation
Uinta County Herald, Editor
Uinta County Planner
Utah Division of Wildlife Resources
Utah Four Wheel Drive Association
Utah Hunters Association
Utah Hunters Federation
Utah Petroleum Association
Utah Power and Light
Utah Wilderness Association
Utah Wildlife Federation
Utah Wildlife Leadership Coalition
Wasatch-Cache Federation
Wasatch Mountain Club
Western Wyoming College
Wildlife Society, Wyoming Chapter
Wyoming Association of Professional Archeologists
Wyoming Geological Association
Wyoming Wildlife Federation

Federal Agencies

Department of Interior Agencies

Bureau of Indian Affairs
Bureau of Mines
Bureau of Reclamation
Minerals Management Service
National Park Service
Office of Surface Mining
U.S. Fish and Wildlife Service
U.S. Geological Survey

Other Federal Agencies

Army Corps of Engineers
Department of Energy
Department of Transportation
Environmental Protection Agency
Federal Energy Regulatory Commission
Federal Highway Administration
Nuclear Regulatory Commission
U.S. Air Force
U.S. Army
U.S. Forest Service

APPENDIX A

LEASE STIPULATIONS REGULATING SURFACE OCCUPANCY

While this environmental analysis has provided many mitigation measures designed to minimize adverse environmental impacts, it should be recognized that existing lease documents may have pre-existing measures imposed on occupancy development of certain areas. These are listed in Table A-1. First listings of all lease

stipulations are explained. The second time a stipulation is listed, it is referred to by number.

When used in conjunction with additional measures stated in Appendix B, the selection of the appropriate measures shall consider minimization of adverse impacts to natural resources.

TABLE A-1
SPECIAL LEASE STIPULATIONS

Lease Locations	Special Stipulations
T. 12 N., R. 113 W. Sec. 1: Lot 3 NW1/4SW1/4	1. No occupancy/surface disturbance will be allowed on slopes in excess of 20 percent.
T. 12 N., R. 114 W. Sec. 2: Lot 4 Sec. 3: Lots 1, 2, S1/2NE1/4, N1/2SE1/4, SW1/4SE1/4	1. 2. No occupancy/surface disturbance within 660 feet of live water streams. 3. No exploration or development activity from December 15 to March 31.
T. 12 N., R. 114 W. Sec. 3: Lot 3, 4, S1/2NW1/4, SW1/4 Sec. 4: Lot 1, SE1/4NE1/4, E1/2SE1/4	1, 2, 3
T. 12 N., R. 114 W. Sec. 17: All Sec. 18: Lots 1, 2, 3, 4, E1/2, E1/2W1/2 Sec. 19: Lots 1, 2, 3, 4, E1/2W1/2 Sec. 20: All Sec. 29: Lots 1, 2, 3, 4 Sec. 30: Lots 1, 2, 3	4. No occupancy/surface disturbance within 500 feet of any road. 5. No occupancy/surface disturbance within 200 feet of any designated trail. 6. No occupancy/surface disturbance within 500 feet of the high water line of any and all streams, lakes, ponds, and reservoirs. 7. No occupancy/surface disturbance within 400 feet of any and all springs. 8. No occupancy/surface disturbance within 400 feet of any improvements either owned, permitted, leased, or otherwise authorized by the surface management agency.
T. 12 N., R. 114 W. Sec. 8: Lots 1, 2, 3, 4, 5, 6, 7, 8, N1/2, N1/2S1/2 Sec. 9: Lots 1, 2, 3, 4, 5, 6, 7, 8, N1/2, N1/2S1/2	4, 5, 6, 7, 8. 9. No exploration or development activity from November 1 to April 30.

APPENDIX A

TABLE A-1 (Continued)
SPECIAL LEASE STIPULATIONS

Lease Locations	Special Stipulations
T. 12 N., R. 114 W.	
Sec. 11: Lots 1, 2, 3, 4, 5, 6, 7, 8, NW1/4NE1/4, S1/2NE1/4, N1/2SE1/4.	2, 3
Sec. 10: Lots 1, 2, 7, 8, S1/2 NE1/4, NW1/4, N1/2SW1/4, NW1/4SE1/4.	
Sec. 12: Lots 1, 2, 3, 4, 5, 6, 7, 8, S1/2N1/2, N1/2S1/2.	
Sec. 13: All	
Sec. 14: All	
Sec. 23: NE1/4, N1/2NW1/4	
Sec. 24: N1/2NW1/4, SW1/4NW1/4.	
T. 12 N., R. 114 W.	
Sec. 15: S1/2NE1/4, NW1/4, S1/2	10. No occupancy/surface disturbance will be allowed on slopes in excess of 25 percent. 11. No drilling or storage facilities will be allowed within 500 feet of Henrys Fork River.
T. 12 N., R. 114 W.	
Sec. 4: Lots 2, 3, 4, SW1/4NE1/4, S1/2NW1/4, W1/2SE1/4.	3
T. 12 N., R. 115 W.	
Sec. 1: Lots 1, 2, 3, 4, S1/2N1/2, S1/2	4, 5, 6, 7, 8
Sec. 2: Lots 1, 2, 3, 4, S1/2NE1/4, SW1/4NW1/4, S1/2	
Sec. 10: Lots 1, 2, 7, 8, NE1/4, N1/2S1/2.	
Sec. 11: N1/2, N1/2S1/2.	
Sec. 12: N1/2, N1/2S1/2.	
Sec. 14: All	
Sec. 22: All	
T. 12 N., R. 15 W.	
Sec. 27: Lots 1, 2	10,
Sec. 13: SW1/4NE1/4, W1/2, SE1/4	12. No occupancy/surface within 500 feet of any surface water and/or riparian area. 13. No occupancy/surface disturbance within a quarter mile or visual horizon from a historic trail.
T. 12 N., R. 115 W.	
Sec. 3: Lots 1, 2 S1/2NE1/4, SE1/4	14. No occupancy/surface disturbance will be allowed on slopes in excess of 40 percent.
Sec. 10: Lots 3, 4, 5, 6, NW1/4	
T. 12 N., R. 115 W.	
Sec. 23: All.	15. No occupancy/surface disturbance within 100 feet of the Sage Creek road.
Sec. 26: Lots 1, 2, 3, 4	16. No occupancy/surface disturbance within 200 feet of the Red Mountain Road.
T. 13 N., R. 113 W.	
Sec. 21: All	1. 17. No occupancy or other surface disturbance will be allowed within 300 feet of intermittent streams or ponds.

APPENDIX A

TABLE A-1 (Continued)
SPECIAL LEASE STIPULATIONS

Lease Locations	Special Stipulations
T. 13 N., R. 114 W. Sec. 13: SW1/4, S1/2SE1/4.	1, 18. No exploration or development activity from December 15 to February 28.
T. 13 N., R. 114 W. Sec. 14: All	1
T. 13 N., R. 114 W. Sec. 19: NE1/4 Sec. 20: SW1/4	19. No exploration or development activity from October 15 to May 15.
T. 13 N., R. 114 W. Sec. 20: NW1/4, SE1/4.	20. No occupancy or other surface disturbance within 500 feet of Sage Creek.
T. 13 N., R. 114 W. Sec. 20: SE1/4NW1/4 Sec. 21: NE1/4NW1/4, S1/2NW1/4, SW1/4 Sec. 27: NW1/4, SE1/4. Sec. 28: All Sec. 34: All	21. No exploration or development activity from October 1 to June 1.
T. 13 N., R. 114 W. Sec. 21: E1/2	1, 22. No occupancy/surface disturbance within 300 feet of any intermittent streams or ponds.
T. 13 N., R. 114 W. Sec. 22: E1/2	23. No exploration or development activity from October 15 to May 15.
T. 13 N., R. 114 W. Sec. 29: SE1/4NW1/4, SW1/4. Sec. 30: SE1/4SE1/4. Sec. 33: E1/2, SE1/4SW1/4.	1, 3
T. 13 N., R. 115 W. Sec. 34: W1/2NW1/4, SW1/4SW1/4	4, 5, 6, 7, 8, 24. No occupancy/surface disturbance within 200 feet of Milch Ditch and Graham Reservoir.



APPENDIX B

REQUIRED MEASURES TO MITIGATE ENVIRONMENTAL IMPACTS

Appendix B contains stipulations designed to prevent, minimize, or mitigate adverse impacts to the environment that could be expected from oil and gas field development activities. Specific measures would be applied to each permitted activity. In addition to the stipulations listed here, requirements of law and regulation would be applied.

The listing of stipulations is organized as follows:

Part I lists general measures that would apply to construction and operation activities in general. These measures would generally benefit multiple resources and ensure that construction and use occur within authorized limits.

Part II lists measures specifically designed to reduce impacts to a single resource or a closely related group of resources.

Part III describes the reclamation plan process and components, to elaborate on plan requirements described in other regulations.

Again, these measures would be applied site specifically to individual permits. If determined necessary to minimize impacts, or in light of new facts, these measures may be added to, modified, or selectively not applied. Determination of final measures will be made by the authorized officer (AO) after consultation with the interdisciplinary team (ID team) who will have made recommendations based on on-the-ground situations.

I. General Measures

1. These (rights-of-way, permits, etc.) do not convey access across private, state, or fee lands. These (rights-of-way, permits) are issued on the condition that the company has secured or will secure the necessary additional rights-of-way.
2. Permittees and other regular users of public lands affected by construction of the projects will be notified in advance of any construction activity that may affect their businesses or operations. This will include,

but not be limited to, signing of temporary road closures, and notification of proposed removal and/or cutting of fences, and disturbances to range improvements or other use related structures.

3. During the final survey of the linear facilities (pipelines, transmission lines, etc.), the centerline and outside boundaries of the linear facilities will be staked and flagged. Stakes will be no more than 200 yards apart on open rangelands and a maximum of 100 feet apart on forested lands. Holder/operator name and station numbers of the survey will be written on each stake or hub. Where the linear facilities parallel an existing line, the existing line will be flagged where necessary to avoid disturbance of the existing line. The AO reserves the right to make adjustments in right-of-way alignment as may be necessary to minimize environmental impacts.
4. The company shall schedule and attend a preconstruction conference with the AO and his representative prior to commencing construction activities on these (rights-of-way, permits). The company or his representative and all of his contractors or agents involved with construction under these (rights-of-way, permits, etc.) shall attend this conference. The company shall contact the AO or his representative at least 10 working days (2 weeks) prior to the anticipated start of construction to schedule this conference.
5. The company shall protect all survey monuments, witness corners, reference monuments, and bearing trees within these (rights-of-way, permits) against disturbance during construction, operation, maintenance, and rehabilitation. If any monuments, corners, or accessories are destroyed, obliterated, or damaged during construction, operation, or maintenance, Holder shall secure the services of a Registered Land Surveyor to restore the disturbed monuments, corners, or accessories, at the same location, using surveying procedures found in the *Manual of Surveying Instructions for the Survey of the Public Lands of the United States*, latest edition. Holder shall record such

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- survey in the appropriate county and shall send a copy to the BLM Wyoming State Office, P.O. Box 1828, Cheyenne, Wyoming 82001.
6. The requirements within the Reclamation Guidelines and FS Region 4 Rooding Guidelines for Oil and Gas Development will be followed in the development of APDs.
 7. The company shall, at all times during construction, maintenance, and operation, maintain satisfactory spark arrestors on all steam and internal combustion engines and on all flues used in operations under this grant.
 8. Unless otherwise approved in writing by the AO, dikes or cofferdams shall be installed to separate areas where concrete is being placed, from lakes or streams during construction. Mobile ground equipment shall be kept within the right-of-way or permit area and out of the waters of lakes, streams, or rivers except as permitted by the AO.
 9. Power transmission and distribution lines shall be designed and constructed in accordance with accepted standards and specifications for power transmission lines of similar voltage, capacity, and purpose. The company shall place and maintain suitable structures and devices to reduce to a reasonable degree, the liability of contact between its power transmission line and telegraph, telephone, signal, or other power transmission lines heretofore constructed and shall also place and maintain suitable structures and devices to reduce to a reasonable degree, the liability of any structures or wires falling or obstructing traffic or endangering life on highways or roads.
 10. Prior to the beginning of operations, the company shall submit to the AO a certification of construction, verifying that the facility has been constructed and tested in accordance with the terms of the use authorization, and in compliance with the required plans and specifications, and applicable federal and state laws and regulations. An "as built" survey map will be submitted to the AO within 60 days after construction is completed.
 11. Upon receipt of a certification of construction, when all development and rehabilitation have been completed, a joint compliance check of the right-of-way or permit area shall be made by the company and the AO or designated representative to determine compliance with the terms and conditions of the use authorization. The company shall perform, at its own expense, any required modifications or additional reclamation work for compliance with such terms and conditions.
 12. The company shall construct, operate, and maintain the facilities and structures within these (rights-of-way, permits, etc.) in strict conformity with the descriptive and technical data furnished to the Bureau of Land Management (BLM) or Forest Service (FS) in connection with the application. Any relocation, additional construction, or use which is not in accord with such data may not be initiated without the prior written approval of the AO. A copy of the complete application and a copy of the (grant, permit) stipulations shall be available on location during construction and rehabilitation to all supervisory personnel and to the AO. Noncompliance with the above will be grounds for the AO to shut down the operation until compliance is obtained.
 13. The company shall conduct all activities directly or indirectly associated with the construction, operation, and maintenance of this facility within the limits of the (rights-of-way, permits, etc.). In the event that areas outside of the (rights-of-way, permits) are needed, the company shall obtain a separate use authorization.
 14. The holder shall comply with the applicable federal and state laws and regulations concerning the use of pesticides (i.e., insecticides, herbicides, fungicides, rodenticides, and other similar substances) in all activities or operations under this use authorization. The Holder shall obtain from the AO approval of a written plan prior to the use of such substances on National Forest or public lands. The plan should be submitted no later than December 1, of any calendar year that covers the proposed activities for the next calendar year (e.g., December 1, 1987, deadline for a calendar year 1988 action). If need for emergency use of pesticides is identified, the use must be approved by the AO. The use of substances on or near the right-of-way or permit area shall be in accordance with the approved plan. A pesticide shall not be used if the Secretary of the Interior has prohibited its use. A pesticide shall be used in accordance with its registered uses and within other limitations if the Secretary has imposed limitations. Pesticides shall not be permanently stored on public lands.

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15. No signs or advertising devices shall be erected on the area designated by these rights-of-way, permits, etc. (National Forest or public lands) without prior approval by the FS or BLM as to location, design, size, color, and message. Erected signs shall meet standards provided by the AO and be maintained or renewed as necessary.
16. Garbage and other refuse will be stored in containers at all times and disposed of at least once a week in authorized county-approved sanitary site or landfill. Used engine oil which is changed on federal lands will be stored in suitable containers and arrangements made for delivery to secondary refineries. All measures will be taken to prevent hydrocarbon spills. If such a spill accidentally occurs, the AO will be notified immediately and corrective measures undertaken as directed.

II. Resource Measures

Resource measures 1 through 14 refer to wildlife management.

1. State wildlife laws and regulations will be posted in conspicuous places at the job sites. All construction and production workers will be provided with training on wildlife and field development impacts to habitat and species, by the company. Guns will be prohibited from job sites. This will help to reduce incidents of violation of wildlife laws.
2. During construction and operation phases, dogs, excepting guard dogs and seeing eye dogs, will be prohibited from well sites and construction sites. This will help to reduce harassment to wildlife.
3. Where the AO determines that rehabilitation of temporarily disturbed areas within crucial wildlife habitat on federal land will not be successful within 5 years from disturbance, the company will be required to compensate for the lost habitat. Temporarily disturbed areas do not include those covered by permanent facilities like road beds, well site equipment, etc. Such crucial wildlife habitat will be determined by the AO in conjunction with the Wyoming Game and Fish Department (WGFD) or Utah Division of Wildlife Resources (UDWR) and Forest Service if on National Forest lands. Compensation will include continued rehabilitation efforts on the disturbed areas and development and implementation of an offsite mitigation plan for similar crucial habitat on federal land within the species use area that is in poor condition due to natural or man-made causes or replacement of similar habitat through land or grazing rights purchase. The plan must be approved by the AO who will coordinate with the WGFD or UDWR.
4. Colored markers will be hung on transmission and distribution lines to increase visibility of wires over river crossings within known bald eagle or whooping crane use areas to reduce eagle and crane collisions with wires.
5. The crucial ranges and other important wildlife areas will be avoided (Table B-1) during well drilling and construction of all facilities unless direction is otherwise given from the AO after coordination with the state game and fish agency concerning resident wildlife, and the U.S. Fish and Wildlife Service (Cheyenne, Wyoming) concerning migratory birds. This would eliminate or reduce many adverse impacts to species of concern. (See Wildlife Technical Report wildlife maps for location of specific areas.)
6. Staging areas for stream crossing equipment will be located outside of the stream's riparian zone to reduce the possibility of silt entering into streams and to reduce disturbance to vegetation in the riparian zone. A maximum width construction disturbance of 25 feet would be used in riparian areas to reduce disturbance. Variances to this must be approved by the AO.
7. Well pads and other facilities, currently and in the future, planned for the riparian zone shall be offset from the stream bank and/or out of alluvial soils or soils with poor drainage as approved by the AO. The distance should be at least 500 feet when topographically possible.
8. Crossings of the Henrys Fork River will be conducted during the fall low flow period. This will minimize habitat degradation by limiting the amount of suspended solids and turbidity generated during instream construction.
9. Crossings of other perennial streams, except for Sage Creek and Little Sage Creek, will be accomplished using bridges or arch culverts. Culvert crossings of perennial streams will not be allowed, unless by arch-type culvert that would maintain slope, alignment, and integrity of stream channel. Culvert crossings of intermittent streams may be authorized on a site specific basis. Crossing of Sage Creek and Little Sage Creek will not be authorized, except by existing route along the Reed road.

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TABLE B-1
SEASONAL WILDLIFE STIPULATIONS

Area	Period
Elk critical winter range	November 15 to April 30
Elk calving areas	May 1 to June 30
Moose critical winter range	November 15 to April 30
Deer critical winter range	November 15 to April 30
Sage grouse leks	March 1 to June 30
Golden eagle nests (within 1/2 mile)	February 1 to July 15
Osprey nests (within 1/2 mile)	April 15 to August 15
Prairie falcon nests (within 1/2 mile)	March 15 to August 1
Merlin nests (within 1/2 mile)	April 15 to August 15
Ferruginous hawk nests (within 1 mile)	March 15 to July 15
Cooper's hawk nests (within 1/2 mile)	April 1 to August 15
Burrowing owl nests (within 1/2 mile)	April 15 to July 15
Swainson's hawk nests (within 1/2 mile)	April 1 to July 15
Cutthroat-rainbow trout (stream crossings)	April 15 to July 10
Brown and brook trout (stream crossings)	September 1 to November 1

10. Water quality testing and monitoring will be provided by the agencies. Problems and/or situations creating a decline in water quality will be corrected immediately by the company, who will be responsible for additional mitigation as required by the AO. Problems noted in ground water monitoring will require testing of suspect wells as determined by the AO.
11. In the event an applicant finds it necessary to remove a beaver pond which has flooded an existing road, the applicant will initiate consultation with the WGFD and BLM or the FS.
12. Under the terms of the Endangered Species Act (ESA) of 1973, the company will conduct surveys, no more than 1 year prior to disturbance, to determine if listed species or their habitats might be present on areas to be disturbed by any of the proposed actions, or alternatives. If listed species or their habitats might be present and could be affected by the proposals, appropriate consultations with the U.S. Fish and Wildlife Service (FWS) will be conducted by the federal authorizing agency. No activities will be authorized until consultation is complete as specified by Section 7(c) of the ESA consultation process which would specify the mitigation measures to be

carried out. The Biological Opinion, issued by the FWS as a result of the consultation process, will specify the mitigation measures to be carried out by the company.

The company, in consultation with the AO, shall develop a conservation plan consistent with the USFWS Biological Opinion that will ensure the continued existence of threatened or endangered species is not jeopardized or that their critical habitat is not destroyed or adversely modified.

Any prairie dog towns located within 1/2 mile of proposed construction activities will be surveyed for occurrence of black-footed ferrets. Any black-footed ferret surveys that may be required will be coordinated with the Endangered Species office of the USFWS, located in Helena, Montana. Any report generated from such surveys will be submitted to the Helena office for review and concurrence prior to any disturbance.

13. Any active golden eagle nests found within one mile of the project activities will be protected from harassment during the critical nesting period because of provisions established by the Bald Eagle Protection Act which requires the protection of golden eagles and its nests.

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14. The company shall design and construct transmission or powerlines to meet all requirements contained in *Suggested Practices for Raptor Protection on Powerlines*. Prior to construction, the company shall provide the AO with drawings which show phase spacings, configurations, and grounding practices for power distribution lines. The Company shall modify any structures not in conformance with *Suggested Practices for Raptor Protection on Powerlines* as determined by the AO.

15. Unnecessary flaring of gases within calving range will be avoided during calving season.

Resource measures 16 through 21 refer to soils and vegetation management.

16. All new well field pipelines and transmission lines will be required to use common rights-of-way when economically and technically feasible. The exact locations will be determined as necessary by the AO. Although this measure will not eliminate loss of vegetation for new facilities, it will concentrate development to designated areas limiting impacts on land use and wildlife. Maintenance and erosion control would be accomplished more easily with corridors confined to the same vicinity; it may also eliminate excessive cut and fill for new roads.

17. During transmission line construction, brush (shrub) clearing along access trails and at tower assembly areas will be limited to trimming and/or crushing to avoid disturbing root systems. This measure will be effective in limiting the amount of shrub vegetation disturbed along the transmission right-of-way. By not disturbing the root system, some crushed or clipped shrubs will resprout and revegetate the right-of-way more quickly. This will reduce soil erosion and speed restoration of wildlife habitat. Any blading would require authorization in advance.

18. The area of well pad disturbance will be completely fenced with a gate or cattle guard installed. All areas not needed for producing on the well pads must be recontoured and rehabilitated following the drilling phase for each well. All topsoil stripped from disturbed areas will be respread on unused portions of well pads and reseeded. The determination of the area necessary for operation will be made by the AO in consultation with the operator. This measure will be effective in revegetating the well pad area and will reduce soil erosion and speed restoration.

19. Watering or other approved dust abatement procedures will be used to prevent severe wind erosion and loss of soil material during construction.

20. In compliance with the reclamation plans (refer to part III), the company will reclaim the surface of disturbed areas to conform with adjacent terrain by replacing fills in the original cuts, replacing topsoil material, constructing water bars, and revegetating the surface.

21. Where possible, avoid surface disturbing activities of areas containing sensitive plant *Thelesperma pubescens*.

Resource measures 22 through 24 refer to forest products management.

22. When timber is cleared, all tree stumps will be cut as low as practical, but not higher than 14 inches. The trees will be limbed and stacked adjacent to the right-of-way, permit, etc. area. During cleanup, all clearing and grubbing debris (slash), excluding stumps and usable products will be piled for burning or buried as specified by the AO.

23. Preclearing of mountain brush and tree-covered areas prior to dozer and maintenance blade work will be required. Preclearing may involve hand cutting brush and trees and removing them to designated areas. (If merchantable timber is involved in clearing on a right-of-way, permit area, etc., it must be harvested in accordance with the terms of the BLM or FS timber sale contract.)

24. The clearing of timber, to reduce fire hazard, shall be limited to the right-of-way.

Resource measures 25 through 31 refer to water resources management.

25. All waste water injection wells will meet Water Quality Division's DEQ requirements and companies will be required to obtain permits prior to drilling waste water injection wells. Waste water may not be leaked or injected into formations of fresh water aquifers or into aquifers containing less than 5,000 milligrams per liter (mg/l). The Water Quality Division will permit injection only into Class VI aquifers.

26. All pressure injection wells must be designed in accordance with standards of the Water Quality Division and the Wyoming Oil and Gas Commission as well as federal regulations (43 CFR 3160.5-2). In addition, those wells on federally owned minerals must have the approval of the Authorized Officer. Cementation of the annular space between

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the well casing and the well bore would greatly reduce the potential for contaminating aquifers penetrated by the well. Poor quality waters from saline aquifers, or leaked from poorly constructed or corroded casing would be prevented from migrating vertically along this annular space to aquifers which contain good quality water.

27. All river, stream, and wash crossings required for access to project facilities will be at existing roads or bridges, except at locations designated by the AO. Bridges will be installed at points where new permanent access roads cross live streams to allow fish unobstructed passage. Culverts across streams would be avoided unless authorized for site specific situations. Where temporary roads cross drainages or dirt fills, temporary bridges will be installed during construction and removed upon completion of the project. Any construction activity in a perennial stream is prohibited unless specifically allowed by the AO. All stream channels and washes will be returned to their natural state as quickly as possible. Such construction, when it would occur on National Forest Land, will be managed under the restrictions in the FS and Department of Agriculture Policy Statement No. 2019, dated July 8, 1980. All construction for stream crossings will also follow the Stream Protection section of the Reclamation Guidelines.
28. The riparian zone of stream crossing shall be rehabilitated immediately after construction is completed. Until riparian vegetation is established, the disturbed area shall be protected on each side of the stream to prevent sediment contamination of the stream and/or erosion of the banks.
29. A buffer strip of terrestrial vegetation will be left between staging areas and riparian vegetation adjacent to the stream. Riparian vegetation will not be counted upon as a buffer strip because silt collected by the riparian vegetation might enter the stream during high water periods.
30. Because the proposed oil field activities, could reasonably be expected to discharge oil into sensitive waters of the state, an oil spill prevention control and countermeasures (SPCC) plan should be developed in accordance with criteria contained in 40 CFR Part 112, dated December 11, 1973. The plan should address in detail the immediate availability of oil spill containment and

cleanup resources, such as sorbent materials, T-siphon dam installation, manpower, methods to pick up oil from water surface, etc.

Resource measures 31 through 37 refer to visual resources management.

31. In forested areas, pipelines (not located adjacent to roads) will cross existing roads in a configuration that provides visibility of only short segments of the corridor by making a jog soon before and after crossing. Deviations or exceptions based on slope or other technical problems must be approved by the AO. This measure would reduce the extent of visibility of project facilities adjacent to sensitive viewpoints.
32. Power distribution lines in the well fields will be placed underground and located in the pipeline or road rights-of-way when specified by the AO. This measure would reduce the influence created by a scattered maze of wood poles and electrical lines. Undergrounding would have a significant effect in reducing the cumulative adverse visual change that would otherwise occur.
33. Wires, conductors, insulators, and towers of transmission lines will have a dull finish to reduce reflection and visibility of the structures. This measure would reduce the visual contrast of structures, particularly as seen from middleground and background viewing areas.
34. The companies will be required to remove litter including broken equipment, work trash, and other man-produced material, from well field units, plant sites, and other areas of operation. Litter will be disposed of in approved sites. This measure will minimize adverse visual impacts from litter in the project area.
35. The clearing of rights-of-way, permit areas, etc., in timbered, dense shrub, and scenic areas shall be done in accordance with the approved clearing plan and shall be limited to a minimum width necessary to prevent interference of trees and other vegetation with the facility construction. The AO may require clearing to be "feathered or graded" with curved or undulating boundaries to lessen visual "tunnel" effect. Where the right-of-way, permit area, etc., enters timber, including dense shrub, from meadows or other open areas, the AO may require clearing to be "feathered" into the timber in

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order to retain maximum natural vegetative patterns. The AO may require that the principals of landscape architecture be used in the design of the clearing plan. The clearing of rights-of-way, permit area, etc., in canyons spanned by power lines will be limited to that required to build the line and maintain clearance with the conductor. Trees and shrubs will be cleared by hand on fragile steep slopes and rock areas as identified by the AO prior to construction.

36. A plan to minimize visual impacts from structures will be required. The company will design the pipeline routes and ancillary structures to blend into the existing environment so as to meet the minimum degree of contrast acceptable for the Visual Resource Management Class and Visual Quality Objectives in which the structures would be located. The AO will evaluate and approve measures before construction begins.
37. The company shall precolor or paint all permanent structures (on site for a period longer than 90 days after construction) a flat, noncontrasting color that is harmonious with the adjacent landscape. Exceptions to this requirement would be determined on a case-by-case basis by the AO because of varying levels of sensitivity, or structures which require safety coloration in accordance with Occupational Safety and Health Administration requirements. Prior to use, color selection will be approved by the AO.

Resource measures 38 through 40 refer to cultural resources management.

38. Prior to any surface disturbing activity, the company, in consultation with the AO and the Wyoming State Historic Preservation Officer (SHPO), shall make an inventory of all archeological and historical sites on all BLM and FS lands within the Luckey Ditch Unit and of all other areas where surface disturbance is authorized by federal permit, right-of-way, etc. or conduct a site specific reconnaissance for each site disturbing proposal prior to construction. The agencies shall develop a cultural resource treatment plan outlining procedures for identifying and evaluating historic and prehistoric resources within the EIS area. The treatment plan will also outline methods for mitigating adverse effects to significant cultural resources that cannot be avoided.
 39. Any cultural resource (historic or prehistoric site or object) discovered by the company or any person working on his behalf, shall be immediately reported to the AO. The company shall suspend all operations in the area of such discovery until written authorization to proceed is issued by the AO. An evaluation of the discovery will be made by the AO and SHPO to determine appropriate actions to prevent the loss of significant cultural values. The company will be responsible for the cost of evaluations and for mitigation. Mitigation may include rerouting or excavation, and any decision as to proper mitigation measures will be made by the AO after consulting with the company.
 40. The agencies shall identify areas, within and adjacent to the study area, such as cliff faces, that have a high potential to contain significant cultural resources, especially burials. The agencies shall inventory these areas and identify and evaluate any cultural resources found. The agencies will monitor sensitive areas on a weekly basis to prevent vandalism of significant cultural resources, during major construction periods.
- Resource measures 41 through 45 refer to protection of paleontological resources.
41. The company will provide a qualified paleontologist who would be approved by the AO. The paleontologist will conduct an intensive (pedestrian) survey of the Bridger Formation identified along routes or at sites as approved by the AO. Surveys will be completed on the areas identified and an appropriate report prepared and submitted to the AO for approval before construction begins.
 42. The paleontologist will be available, as determined by the AO, during surface disturbance on the Bridger Formation. If, in the opinion of the paleontologist, paleontological values specified by the BLM would be disturbed, construction will be halted or diverted until appropriate action can be taken.
 43. The company shall follow the mitigation requirements set forth by BLM concerning protection, preservation, or disposition of any localities or fossil material discovered. In cases where salvage excavation is necessary, the cost of such excavations shall be borne by the company unless otherwise stated.
 44. The paleontologist will notify the AO a minimum of 3 working days before site monitoring. Construction methods will be used that allow the paleontologist to identify buried fossils without endangering the personnel who are monitoring the surface disturbance. If any potentially significant buried resources are identified either along

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the route or on sites to be used for surface facilities and the paleontologist determines that further operations will seriously affect them, work will be suspended and BLM will evaluate the resource and develop additional stipulations as needed. The operator will bear the costs of avoiding or salvaging any specimen identified by the paleontologist. A report of all activities of the paleontologist will be submitted to BLM within 30 days after monitoring is completed.

45. The AO may require the company to relocate proposed roads, pipelines, or facilities in order to avoid destruction of paleontological values, or to delay construction until salvage operations are completed. All salvage from federal land shall remain the property of the United States and shall be turned over to the BLM.

Resource measures 46 through 54 refer to transportation management.

46. The company will schedule their own and their contractors' large truck activities to avoid the following high recreation demand weekends. This will normally cover 3-day periods.

- Memorial Day
- Independence Day
- Pioneer Day (July 24)
- Labor Day
- First 2 weekends of big game season (this may differ with species).

47. In spring and fall months when road moisture content is high, as determined by the AO, the company and their contractors will limit large truck activity in the well field to periods of frozen road conditions. This measure will help preserve the stability of road beds and maintain travel surfaces.
48. The company and their contractor will use front and rear vehicle escorts in the well field for oversized, overweight loads to maximize safety, as determined by the AO. This procedure will help maximize the operational safety of equipment transport in the well field.
49. On federally permitted roads, stop signs and advance warning signs will be installed in areas of intersecting traffic, construction, and conditions of dangerous operation. A maximum of 25 MPH speed limit will be enforced by the companies. The traffic and speed control, and informational signing will help minimize the potential for accidents at intersecting roadways.

50. A transportation plan will be submitted as part of the Construction and Use Plan. This plan will request approval for the construction of new roads and reconstruction of existing roads. The AO may require the company to share in the cost of performing work needed to bring collector roads to standard. Reconstruction and construction will include clearing work. Overland access could be specified in lieu of road construction or reconstruction.

Whenever practical, "cross country" access will be utilized without clearing vegetation or grading a road bed. All construction and vehicular traffic is to be confined to the right-of-way or designated access routes, roads, or trails unless otherwise authorized. All temporary work roads to be used for construction will be rehabilitated after construction in accordance with the approved reclamation plan. Only one road or access route will be permitted to each site requiring access. Any existing transportation or utility rights-of-way will be used wherever practicable to minimize adverse environmental impacts and the proliferation of separate rights-of-way.

51. Access roads necessary for operation and maintenance of the project will be clearly identified. Some of these access roads may be designated by the authorizing agency as closed for public use, including but not limited to, off-road vehicle (ORV) travel.
52. The company will need to obtain necessary access permits from the county and Wyoming Highway Department for approach to a county, state, or U.S. highway prior to commencing any construction activity associated with the (grant, permit).
53. The company shall be responsible for preventive and corrective road maintenance from the beginning to completion of operations under this (grant, permit). This may include, but not be limited to, blading roadway, cleaning ditches and drainage facilities, dust abatement, or other requirements as directed by the AO.
54. Existing roads other than those used by the companies may need to be closed to mitigate additional road construction. Roads used by the companies may need gates to restrict traffic. Closing or restricting transportation routes shall use approved gate designs, installation of earth structures, installation of traffic barriers, or other measures approved by the AO.

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Resource measures 55 and 56 refer to health and safety management.

55. The company shall perform all work with explosives and flammable materials in such a manner as not to endanger life or property. All storage places for explosives and flammable material shall be marked **DANGEROUS**. The method of storing and handling explosives and flammable materials shall conform to recommended procedures contained in the *Blaster's Handbook* published by E.I. du Pont de Nemours and Company, and in all federal, state, and local laws and regulations.

56. The company will be required to control ORV use within these (rights-of-way, permits, etc.). During construction, the company shall regulate access and vehicular traffic as required to protect the public, wildlife, and livestock from hazards associated with the project. The company shall permit free and unrestricted public access to and upon the area except where designated as restricted by the company. All restricted areas shall be approved in writing by the AO.

The company shall be allowed, with prior written approval from the AO, to close the road to public access for limited periods during the construction phase of the project should it be necessary to do so to protect and insure public health and safety. At all other times, the holder shall permit free and unrestricted public access to and upon the right-of-way, permit, etc., except on National Forest roads designated as closed to public traffic.

Measures 57 and 58 provide for management of specific disturbance to existing improvements.

57. Disturbance of improvements such as fences, roads, and watering facilities during the construction and maintenance of the rights-of-way, permits, etc., must be kept to an absolute minimum. Immediate restoration of any damage to improvements to at least their former state will be required. Functional use of these improvements must be maintained at all times. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting the fence. A gate or cattle guard acceptable to the AO shall be installed in the gate opening and kept closed when not in actual use. Where a permanent road is to be constructed or maintained, cattle guards shall be placed at all fence crossings.

58. If a natural barrier used for livestock control is broken during construction, the holder will adequately fence the area to prevent drift of livestock. In pronghorn antelope ranges, the fence may have to be constructed in a manner which allows for animal passage. All fencing constructed by the company will meet FS and BLM design requirements with input from the WGFD. Fence specifications will be determined on a case-by-case basis.

Measures 59 and 60 will be implemented during abandonment of the field.

59. At least 1 year prior to termination or abandonment of the facilities authorized by a grant, the company shall contact the AO to arrange a joint inspection of the authorized use area. The inspection will be held to agree on an acceptable abandonment and rehabilitation plan. The AO must approve the plan in writing prior to the holder commencing any abandonment and/or rehabilitation activities. The plan may include removal of drainage structures or surface material, recontouring, replacement of topsoil, seeding, mulching, etc.

60. Within 30 days after conclusion of construction and operation, all construction materials, related litter, and debris shall be disposed of in accordance with instruction from the AO.

Measures 61 and 62 could be implemented to mitigate the effects of natural phenomena.

61. Natural phenomena which occur on public land, such as avalanches, rising waters, high winds, falling limbs or trees, mass movement (landslides), and other hazards, present risks to the company's property which the company assumes. The company has the responsibility of inspecting the site, right-of-way, and immediate adjoining area for dangerous trees, hanging limbs, and other evidence of hazardous conditions and, after securing permission from the FS or BLM, of removing such hazards in order to protect the company's improvements.

62. Areas subject to mudflows, landslides, mudslides, avalanches, rock falls, and other types of mass movement will be avoided where practical. Where avoidance is not practical, the design, based upon detailed field investigations and analyses, will provide measures to prevent the occurrence of mass movements. The detailed field investigations and analysis will be the responsibility of the company. Review and approval of mitigating measures will be by the AO.

III. RECLAMATION GUIDELINES

The company will use the following general guidelines in addition to "point 10" of the "13 point" Oil and Gas Operations Surface Use Program, [Operating Order No. 1, Approval of Operations III.G.4.(b).(10)].

Under the requirements of right-of-way grants, a detailed, site-specific reclamation plan will be developed and become part of the Construction and Use Plan submitted by each company (see suggested reclamation plan format, #17).

During construction, operation and abandonment of the project, applicants will provide an experienced reclamation specialist who will provide direction for timely restoration requirements.

Reclamation needs will be considered during project design. Reclamation will be initiated by the September following construction completion.

1. Preliminary Site Review

Data for each wellsite, access road, pipeline segment, and ancillary disturbance will be prepared and analyzed through Operator and AO field visitation, and site will be delineated for inspection during interdisciplinary (ID) team visits.

2. ID Team Visits

The purpose of ID team visits is to locate, inspect, and verify problem areas, identify the nature of the problem; discuss mitigation procedures; and correlate methods or techniques to be incorporated into the site-specific reclamation plan. Site-specific data and maps will be provided to ID team members.

3. Wildlife Considerations

Analysis of impacts on wildlife and proposed mitigation procedures will be presented. Terms of the Endangered Species Act (1973) will be complied with throughout the area of development. Important wildlife areas will be avoided during periods critical to species of concern. Site-specific reclamation plans will cite individual wildlife sensitive time periods.

4. Site Preparation

At all sites, brush will be put into piles, to be subsequently used as mulch material, buried, or burned in an area designated by the AO. Those trees which can be commercially

marketed will be stored in timber decking areas designated by the AO and will be sold.

Slash from trees to be removed, along with trees not marketable commercially, will be put into piles to be subsequently buried, burned, or left piled in an area designated by the AO.

Land grading will be done only on the minimum area required for construction. Existing or constructed roads will be used for vehicle traffic, where possible. Generally, no off-road use of vehicles or equipment will be allowed, especially in streambeds and other fragile areas without the approval of the AO in conjunction with regulatory agencies (i.e., Army Corps of Engineers).

Where the right-of-way crosses streams or wet areas, the banks will be stabilized to limit erosion during the clearing operation. Construction techniques will minimize damage to streambanks and channels. Channel stabilization evaluations will be completed during ID team visits and construction dates and procedures will be verified by the team. If construction through wetlands or streams is deemed necessary, construction will be scheduled to occur during the driest period, when possible, to minimize damage and to coincide with the clearing operations. Wherever sensitive riparian vegetation is identified, specific construction criteria will be adopted.

5. Topsoil Removal and Storage

Available topsoil will be removed and stored to use for reclamation purposes. Care will be taken not to mix topsoil with subsoil or spoil. Topsoil depth will be determined during the ID team visit. Existing and future stockpile areas and topsoil depths will be designated in site-specific reclamation plans, prior to construction disturbance.

Whenever possible, topsoil will not be stored for extended periods (over 2 years) and will be used for immediate reclamation. Topsoil removed from plant sites will be managed to maintain viability over the life of the project by applying all topsoil to the areas of disturbance outside of working area. These areas would be reseeded according to the reclamation plan. After the plant site is reclaimed, necessary topsoil would be available from the above areas.

6. Soil Removal and Storage

At all sites, removal and storage of subsoil and spoil will be according to the approved

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engineering designs submitted with the APDs, SNs, or ROWs. Care will be taken not to mix spoil with topsoil. Erosion will be controlled on spoil stockpiles through appropriate construction design and with mulching and/or revegetation.

7. Soil/Topsoil Replacement

Backfill operations will be confined to the disturbed area. Spoil will be replaced, followed by retopsoiling. The contour of the ground will be restored to permit normal drainage.

All backfilled and graded spoil material will be ripped and scarified on the contour to reduce compaction, thus increasing revegetation potential. All grading and recontouring will be conducted under the supervision of a reclamation specialist and will correspond to the natural topography of the area.

On producing well sites, spoil will be replaced to original or design contours as the placement of production facilities allows. In those areas where final spoil grading is not possible, spoil will be graded to a gentle slope capable of maintaining a temporary vegetation cover for erosion control. Subsoil and suitable substrate materials will be spread over spoil. All topsoil will be replaced to a uniform depth over the nonworking surface of the disturbance in an effort to stockpile the topsoil and stabilize the site. All specifics regarding topsoil depths and additional requirements will be addressed in site-specific reclamation plans and labeled on corresponding maps.

At well sites, when a well is found to be a producer, reclamation of the area not needed for production will begin during the first appropriate season. In the reclaimed area immediately adjacent to the production pad, topsoil for the ultimate reclamation of the production pad will be contoured to provide a deep layer of topsoil. At cessation of production, the pad area will be reclaimed using this extra topsoil. This procedure will avoid long-term topsoil stockpile, erosion control, and enhance topsoil viability.

Along pipelines, preparation of the ROW for construction will consist of removal of the vegetation and the first 6 inches of topsoil, unless specified otherwise by the AO. The vegetation and topsoil will be stripped from the spoil side of the ROW and stockpiled along the outside edge of the nonworking side of the ROW. This topsoil will be kept separate from the excavated subsoil which

will be stockpiled adjacent to the trench. A minimum width of approximately 35 feet will be required to stockpile the topsoil and excavated material. Figure 2-4 in the Final EIS depicts this construction activity.

8. Seedbed Preparation

Following topsoil application, seedbed preparation procedures will be determined on the basis of the physical and chemical characteristics of the topsoil and the physical nature of the site itself. Chiseling, disking, harrowing, and surface manipulation including pitting (gouging), furrowing, and cultipacking, may be included in seedbed preparation and water control.

Samples of topsoil from stockpiles at each site, to be used in permanent reclamation may be required to be tested for nitrogen and phosphorus content, as well as pH. If either nitrogen or phosphate is drastically limited to plant growth, fertilizer will be added to enhance the revegetation process. Fertilization may also be deemed necessary where spoil materials are to be temporarily stabilized with vegetation. Rates will be determined according to testing results.

Mulches will be applied on seedbeds with high soil erosion potential or where seedbed microclimate may limit seedling establishment. Mulches will be determined on a site-specific basis, with grain straw the preferred choice. Mulches will contain no weed species.

9. Seeding and Planting

The objectives of seeding are:

- a. Prompt site stabilization to limit wind and water erosion.
- b. Establishment of vigorous stands of desirable species to limit invasion by noxious weeds.
- c. Restoration of predisturbance productivity.
- d. Provision for food and cover for domestic livestock and wildlife.
- e. Restoration and enhancement of aesthetic values.
- f. Compliance with site-specific revegetation requirements.
- g. Regenerating and self-supporting vegetation.

Because of the wide variety of revegetation situations, with many important variables to be considered, each individual seed mixture

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will contain species known to meet the above objectives.

Seeding will be accomplished when seasonal and weather conditions are most advantageous. Seeding methods include drilling, broadcasting, or hydroseeding as deemed appropriate on a site-specific basis. Seeding rates will be adjusted for individual species within the mixture and for the specific conditions of the site being seeded. Provisions for reseeding, following any seeding failure, will be made.

Planting of trees, shrubs, and other plants in higher stages of development will be dependent upon the site-specific revegetation goals involved.

10. Erosion and Runoff Control

- Drill Pads

Prior to construction, the proposed pad location will be surveyed and staked, including erosion control design considerations. Drill pads will be constructed using the cut slope design criteria listed in Table B-2.

TABLE B-2
CUT SLOPE DESIGN CRITERIA

Cut Material Characteristics	Slope Ratio
Common	1.50:1
Conglomerate	0.50:1
Solid rock	0.25:1

During the construction phase, as deemed necessary, drainage ditches will be installed above the cut. Drainage ditches and sediment control structures (designed for the 10-year/24 hour storm event,) may be installed below the fill. Water (with a flow less than the 10-year/24-hour storm event) will be diverted and/or collected, before being discharged from the disturbed area. Where necessary, culverts will be installed to control erosion from the access road and appropriate vegetation buffers will be left.

The drill pads will be designed and constructed to disturb the smallest practical area. All precautions necessary to stabilize structures will be taken during construction.

Field quality control ASTM approved procedures will be adopted and implemented by the field engineer for all designated structures. Topsoil will be removed from the pad, transferred to designated areas, and stored and stabilized using specific sediment control methods. If excess spoil is generated during the construction of the pad, spoil will be placed in designated areas and stabilized. Qualified supervision will be provided during the installation of all erosion control structures including the construction of berms, dikes, trenches, and the outslope fill.

- Road Design

Surface water runoff and erosion and sedimentation control will be incorporated in all access road design in accordance with BLM Roading Guidelines and installed as approved by the A.O. Site-specific reclamation plans will identify and provide reclamation methods for potential surface water draining areas greater than five acres. Road grades, ditches, culverts, sediment traps, material cut and fill, and topsoil and spoil areas will be designed and located in the field prior to construction. During road design, appropriate erosion and sediment control design criteria (e.g., flow velocities, structure carrying and treatment capacities, and structure location) will be considered. Erosion control technologies include the utilization of organic (mulch) runoff control techniques as the preferred method; however, structural (culverts) and chemical tackifier methods will be utilized as necessary.

Prior to final access road design, the area will be carefully inspected in the field to locate road grades, avoid the disturbance of critically sensitive areas, and identify field conditions which may adversely affect road construction, operation, and maintenance. In areas where cut or fill techniques are deemed necessary, cross section typicals will be provided with the selection criteria to be used as the technical guide (Table B-3).

Critically sensitive areas, such as landslides, steep terrain, stream crossings, and wetlands, will be carefully evaluated to minimize potential road activity impacts. These areas and the following will be incorporated or considered in design plans: channel grades and geomorphic stability, ditch location, culverts, inlet and outlet controls, up and down stream erosion protection, vegetative and riparian buffers, erosion and spoil placement, topsoil salvage and storage criteria, road surface grades,

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TABLE B-3
CRITERIA FOR
CROSS SECTION TYPICALS

Height (feet)	Slope Ratio
0 - 5	3.0:1 (minimum)
6 - 10	2.0:1
over 10	1.5:1

crown and road surface durability characteristics, equipment staging schedules, and slash disposal. The ID team will address the above points during their field review.

- Pipelines

Pipelines will be constructed to minimize erosion and sedimentation. Sensitive areas, such as stream crossings, steep slopes, erosive soils and shallow bedrock, will be identified by the company and the ID team with review by the AO. This information will be used to develop an erosion control strategy. Site-specific reclamation plans will identify and provide reclamation erosion control methods for potential surface water impact for pipeline stream crossings. Intermittent and perennial live stream channel pipeline construction techniques that minimize reduction in normal flow and impairment of water quality will be used (e.g., divert flow using pumps and/or flumes, block portion of stream, construction crossings using equipment mats, etc.). The stream channel will be restored to preconstruction grade and stabilized using appropriate methods, such as riprap, gabions and bulkhead retaining walls, timber, hay bales, and silt fences.

Steep slopes (greater than 25 percent) should be identified specifically in the reclamation plan, and mitigating measures developed to ensure resumption of stability of these sensitive areas. These measures would probably include trench breakers and corridor surface water diversion ditches. These will be placed on spacings of not less than 75 feet, with an outslope grade of not less than 2 percent. Construction impacts to shallow bedrock and thin and erosive soils will also be considered in adopting appropriate pipeline construction mitigation techniques such as mulching, surface roughening, and matting.

Rock mulches will be used in steep-sloping (greater than 25 percent) rock outcrop areas and low precipitation areas to reduce erosion and to promote vegetative growth. Cultivation and land preparation operations on steeply sloping (greater than 25 percent) areas will be done on the contour to minimize erosion. Soil areas having a high concentration of rock fragments, such as very coarse gravel, cobbles or stones, will be restored to the approximate original condition to blend with the adjoining area, avoiding a smooth surface which would otherwise accelerate erosion.

11. Snow Management

All snow to be removed from sites will be stored so as to minimize erosion and mass movement. Suggested snow storage areas and snow fences will be shown on all site-specific reclamation plan maps.

12. Fugitive Dust Control

Fugitive dust is anticipated. When an air quality or safety problem is identified, immediate abatement will be initiated. Water will be used on roads. Additives may be used if approved by the AO.

13. Fencing and Barriers

Normally, the entire well pad area will be fenced to contain disturbance and to protect revegetated areas from damage due to domestic animals and ORVs. (Exceptions to entire location fencing may be granted by the AO on a case-by-case basis.) All fencing will be done in accordance with specifications approved by the AO. ORV barriers will be installed, where necessary, and will consist of boulders, pylons, brush piles, or other feasible barriers as required on a site-specific basis.

14. Noxious Weed Control

Weed control will be limited to noxious weeds pursuant to the reclamation weed control program approved by the AO.

15. Aesthetic Considerations

All permanent structures will be painted in a color which will blend in and not conflict with the environs. Color selection will be approved by the AO at the time of construction or reclamation. Exceptions to this requirement are: those surfaces which require special coloration in accordance with Occupational Safety and Health Administration requirements; piping and vessel insulation; electrical transmission lines; concrete and asphalt surfaces; operating or moving components of equipment; and some small objects.

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16. Monitoring

A monitoring program will be established to evaluate the progress of the revegetation and restoration program. Both qualitative and quantitative monitoring will continue after reclamation until each site has been released by the AO. Ditches, culverts, bridges, traps, and other sediment control measures will be monitored during construction and operation.

Generally, within the first 2 growing seasons after initial disturbance, the company, AO, and appropriate ID team members will review and evaluate restoration efforts. This is conducted to identify problem areas before excessive time elapse and resource degradation has occurred. Site specific rehabilitation measures will be identified.

After the second growing season following initial reclamation efforts, the ID team will determine significant problem areas that may exist, based upon the review of goals and

procedures in the reclamation plan. The problem areas will receive additional rehabilitation measures, and monitoring will be established with a photo point system. The areas, schedule for photo points, and the specific method will be determined by the ID team and the company.

17. Suggested Erosion Control, Revegetation, and Restoration Plan (ERRP)

The purpose of developing a reclamation plan is to allow for cooperative innovation in reclamation of a disturbed area to a predetermined land use for wellfield and treatment plant activities. The following is an outline of topics to be covered in a reclamation plan. All reclamation plans must address these points but are not limited to these items. Although the reclamation plan is a formal document, amendments can be approved by the authorizing officer. The reclamation plan would be point 10 of the 13 point surface use plan.

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Reclamation Plan

Introduction

Clear identification of reclamation goal to be identified by the federal land management agency concerned and should include specific goals for percent perennial cover and species diversity expected for successful reclamation. Predisturbance cover would be used as a guideline for establishing goals.

Short description of activity causing disturbance and project time frames (i.e., proposed start date, duration of project, completion data, estimated end of project life).

Set time frames for reclamation plan, to include seasonal reviews to initiate change and when plan will be considered implemented.

Obligation

Exactly who (individual name, address, phone) is responsible for what in the design of the plan, execution of the plan, and monitoring of progress. An experienced and trained professional (i.e., soil scientist, reclamation specialist) that has been approved by the AO is required to prepare and lead the implementation and monitoring of this plan.

Site Map for Project

To Include:

Soil descriptions and boundaries symbols (e.g., rock outcrop, photo record point, springs and wet spots).

Location and volume of proposed material stockpiles to include the amount of time the material will be stored and type of material in pile.

Identify existing drainage patterns

Identify existing vegetation cover

Identify existing ORV or two-track roads

Identify the proposed disturbed area and beyond the site boundaries by approximately 150 yards.

Controlled Runoff

All disturbed sites, except linear rights-of-way, will maintain controlled runoff until the area is stabilized. Stabilization will be a value that must be clearly defined in the plan.

The AO can approve a variance from controlled runoff based on detailed site specific analysis that would consider meteorology, topography, water quality, and special site design and/or construction measures.

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Erosion Control Measures

Describe Proposed Measures:

Identify levels of runoff planned for; i.e., 50-year storm, etc. Include capacity of all retention structures and engineering design.

Map locating erosion control measures placement to include controlled runoff measures.

Fugitive Dust Control

Watering or other approved dust abatement procedures will be done to prevent severe wind erosion and loss of soil materials during construction. This part of the reclamation plan describes how and when dust abatement procedures will be conducted.

Revegetation

Type

Seed

Established Stock

Site Preparation

Planting

Planting Time Frames

Planting Method and Equipment

Fertilization Program

Rationale for Fertilizing or Not Fertilizing

Monitoring Site Reclamation Progress

Methods

Time Frames

Photo Record Station of Site Predisturbance (*with location*)

Site Abandonment

Include Time Frames

Potential Problems

Address Possible Weak Points such as:

Erosion

Slumping

ORV Use (i.e., cover points that might conflict over controlled implementation with area land use goals)

Snow (management)

Company Fire Policy (weed control) vs. Vegetation Management Goals

APPENDIX C

APPLICATION FOR PERMIT TO DRILL (APD) ENVIRONMENTAL REFERENCE REPORT AND DECISION NOTICE

To make the Hickey Mountain - Table Mountain Environmental Impact Statement (EIS) and its supporting technical reports usable tools, the following processing procedure will be used for well field activities:

<u>Step</u>	<u>Day</u>
1. Initial written request from company (Completed APD)	1
2. Initial analysis, scoping, and interdisciplinary (ID) team identification	3
3. ID team field review	15
4. Final analysis and mitigation requirements sent to company	20
5. Recommendations to BLM Area Manager	25
6. Approval of Application for Permit to Drill (APD)	30

This procedure will ensure all environmental concerns in the EIS are addressed, minimize time spent on paperwork, and ensure that the companies have enough information to submit a completed APD.

Step 1 may be made by telephone, but the government will ask for written follow-up. The clock will not start until written request is received. The Hickey Mountain - Table Mountain Record of Decision, EIS, and technical reports will be used to accomplish Step 2. A brief field trip may also be necessary at this time. From this step, the ID Team will be formed and scoping initiated. No later than 15 days following Step 1, assuming the site is accessible and season permitting, Step 3 will take place with the ID Team in the field. Step 3 will necessarily be delayed until the site is accessible. The final analysis will take place no more than ten days following Step 3. The field ID Team visit will be documented in final form on Figure C-1. Special problems and special mitigations not covered in the EIS may have to be appended. This document will be sent, with recommendations, to the BLM resource area office.

Within 5 days following the field inspection, Step 4, BLM will inform the company of all requirements so that it is able to submit a completed APD.

FIGURE C-1

BUREAU OF LAND MANAGEMENT (BLM)/FOREST SERVICE (FS)
ENVIRONMENTAL REFERENCE REPORT AND DECISION RECORD
Hickey Mountain - Table Mountain Oil and Gas Field Development

Reference No. RR8 _____

☐ Preliminary ☐ Final

1. Applicant: _____ 2. Case Serial Number/Well Number: _____ 3. Administrative Area: _____

4. Project Location: T. _____ R. _____ Section _____ ☐ BLM ☐ FS ☐ BLM/FS

5. Purpose and Need of Project/Proposal: _____

6. Project Description: _____

7. Alternative Description: _____

8. Summary of the Analysis of Environmental Consequences of the Proposed Project and Alternatives:

a. References are on file at BLM offices in Rock Springs and Kemmerer, Wyoming; and FS offices in Mountain View, Wyoming, and Supervisor's Office in Salt Lake City, Utah. These references describe the affected environment and environmental consequences as noted.

1. Hickey Mountain - Table Mountain Final Environmental Impact Statement (FEIS), 1987

2. Hickey Mountain - Table Mountain, Record of Decision (ROD), 1987

3. Technical Reports

4. Construction and Use Plan (CUP) _____

Date

5. Wyoming Oil and Gas Lease No. _____

6. Wasatch-Cache National FLRMP, 1986

7. Kemmerer Resource Management Plan, 1985

8. Salt Wells MFP, 1981

APPENDIX C

FIGURE C-1 (Continued)

Record of Analysis

Reference No. RR8 _____

b. Element

The project/proposal will have the effect indicated on the following elements:

Environmental Factors	Negligible Effect	Consequential Effect ¹	Element Adequately Addressed ²	Additional Analysis/ Field Reconnaissance	Mitigating/ Monitoring Measures
Wildlife					
Fisheries					
Recreation					
Livestock Grazing					
Timber Management					
Soil					
Vegetation					
Watershed					
Visual Resources					
Air Quality					
Paleontology					
Geology					
Socioeconomic Conditions					
Transportation					

FIGURE C-1 (Continued)

Reference No. RR8. _____

Environmental Factors	Negligible Effect	Consequential Effect ¹	Element Adequately Addressed ²	Additional Analysis/ Field Reconnaissance	Mitigating/ Monitoring Measures
Mandatory Items					
Unique Resources (identify)					
T&E Species (identify)					
Cultural or Historic Resources					
Flood Plains/Wetlands/etc.					
Prime Source of Drinking Water					
Public Health or Safety (Site-Specific)					
Other Factors					
Violates Federal/State/Local Law					
Involves Uncertain/Unique Risks					
Involves Unresolved Resource Conflicts					
Sets a Precedent					
Is Highly Controversial					

¹ Item not addressed in the EIS or other reference documents and/or mitigation not defined.

² Specific document reference by section/page number, from references listed in or added to 8a.

c. Environmental Consequences of Alternatives: _____

d. Cumulative Impact Assessment/Recommendation: _____

e. Irreversible or Irrecoverable Commitment of Resources: _____

FIGURE C-1 (Continued)

Reference No. RR8 _____

f. Adverse Residual Impacts (after mitigation): _____

g. Additional Mitigation/Monitoring (see attachments): _____

9. Specialists Included in this Review: _____

10. **Finding of No Significant Impact (FONSI)** - Based on the preceding environmental review documented above, including referenced and attached analysis and mitigation, I find that this action (will)(will not) have an impact on the human environment beyond that previously analyzed and, therefore conclude that an additional environmental document (is)(is not) necessary.

Decision/Rationale:

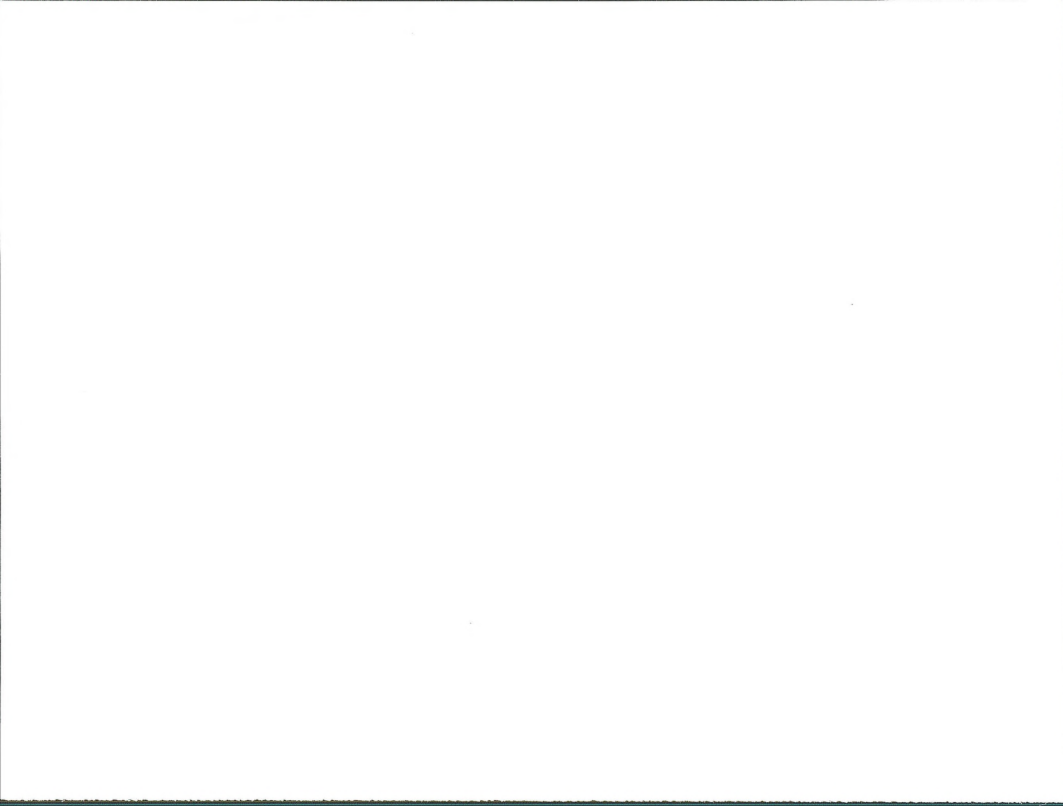
a. **Decision:** The proposal is (approved)(rejected) as (submitted)(modified)(recommended in the Land Report). This recommendation (is)(is not) consistent with the Unit Land Use Plan (ULUP); Forest Land and Resource Management Plan (FLRMP); Management Framework Plan (MFP); Resource Management Plan (RMP)

b. **Rationale for the rejection or modification:** _____

To the best of my knowledge, I believe this environmental analysis meets the requirements of the National Environmental Policy Act of 1969.

Recommended Approval: _____
Forest Service District Ranger Date

Approval: _____
Bureau of Land Management Area Manager Date



APPENDIX D

BIOLOGICAL ASSESSMENT HICKEY MOUNTAIN - TABLE MOUNTAIN OIL AND GAS FIELD DEVELOPMENT EIS

The biological assessment is intended to ensure that Bureau of Land Management (BLM) permitted actions do not contribute to the loss of viability of any native plant or animal, but do provide for the conservation of the species. The assessment provides a process and standards by which to ensure that threatened and endangered species receive full consideration in the decision process.

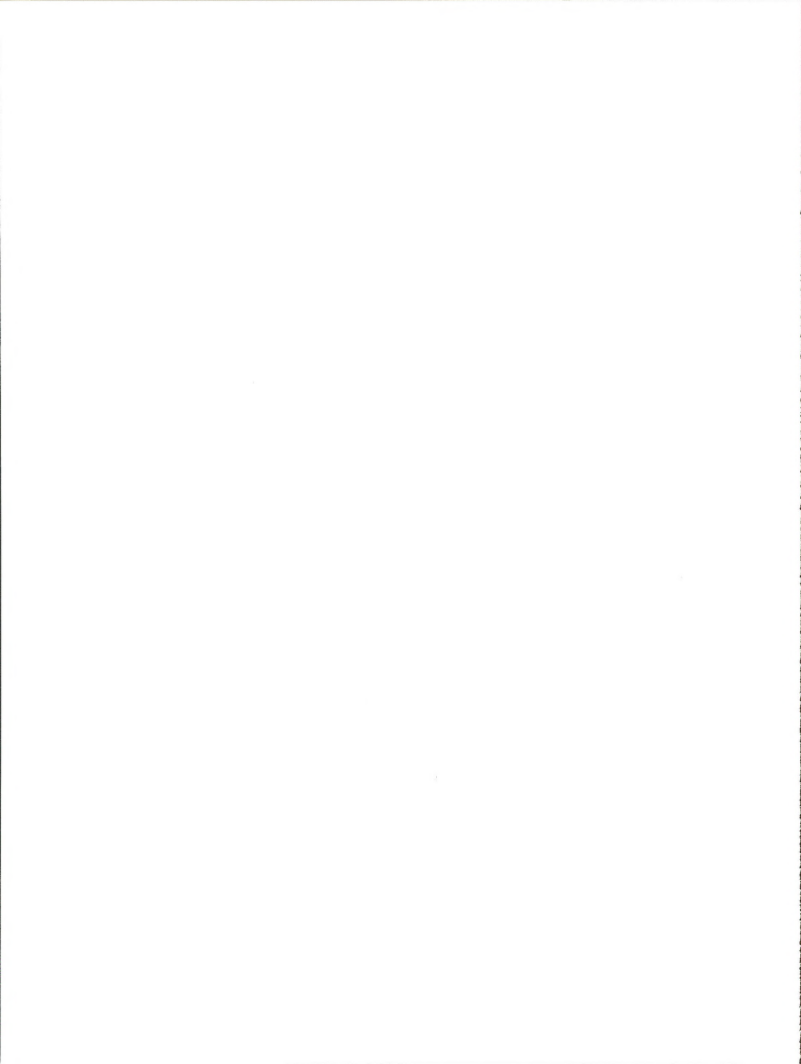
Chapter 4 of the environmental impact statement (EIS), which describes the Environmental Consequences, and the Wildlife Technical Report describe the effects of development activities on bald eagles, whooping cranes, peregrine falcons, and black-footed ferrets. Data used to develop the environmental consequences and technical report were collected by the BLM, primarily from on-the-ground surveys conducted by the Wyoming Game and Fish Department (WGFD). Utah Division of Wildlife Resources, and the U.S. Forest Service, Wasatch-Cache National Forest, also provided data used in the analysis. The activities included in the analysis were oil and gas exploration activities, access road construction, processing plant construction and operation, associated road traffic, and recreational use. The impacts evaluation was based largely on analyses developed for timber management/logging operations effects on elk. Since many of these activities tend to be similar to oil and development activities, the impacts of logging activities are used to assist in determining the impacts of oil and gas development activities on threatened and endangered species.

The standards used for the biological assessment, the identification and description of essential habitats, determination of effects, and

mitigation recommendations are contained in Chapter 4, the Wildlife Technical Report, and its appended Wyoming Game and Fish Department final report. The evaluation and analysis is summarized as follows:

Implementation of the Hickey Mountain-Table Mountain oil and gas field development project is not expected to affect the bald eagle, peregrine falcon, whooping crane, or the black-footed ferret. Bald eagles overfly the general Henrys Fork drainage and some wintering takes place along the river, downstream from the proposed activities. Peregrine falcons most likely overfly the area during migrations but no nesting/resident habitat has been identified. Whooping cranes have used the area during their northern spring migrations. Although a large portion of the Rocky Mountain sandhill crane population (and the associated Gray's Lake whooping crane population) overflies the Henrys Fork River drainage, if development activities are kept mainly away from the river bottom/floodplain area, little impact to future whooping crane use of the area is anticipated. Only two prairie dog towns were identified within within the study area or within one half mile from the study area. Any development activity, either from the Proposed Action or alternatives, anticipated within or near these towns will require black-footed ferret searches.

Based upon the assessment, implementation of the Proposed Action or any of the alternatives will not adversely affect the continued existence of the bald eagle, the peregrine falcon, the whooping crane, or the black-footed ferret. A "no effect" decision is concluded.



APPENDIX E

COMMENT LETTERS AND RESPONSES

A total of 33 comment letters were received after issue of the draft EIS in January 1987. Table E-1 lists the names of those who sent comment letters. The remainder of Appendix E contains reproductions of the comment letters accompanied by our responses to them. Each letter is numbered. Specific points made are numbered consecutively in the body of the letter. Specific responses are correspondingly numbered.

TABLE E-1
COMMENTS RECEIVED BY MAIL

Number (assigned in order of receipt)	Name or Organization
1	Lee Lesmeister
2	Maxine Gosar
3	Western Wyoming College
4	M. Simpson
5	USDI, Bureau of Mines
6	USDI, Bureau of Indian Affairs
7	U.S. Fish and Wildlife Service
8	Uinta County Development Corporation
9	USDI, National Park Service
10	Gordon Scott
11	Marathon Oil Company
12	Sun Exploration and Production
13	Utah Power and Light
14	Cranbrook Institute of Science
15	Wyoming Wildlife Federation
16	Mountain Fuel Resources, Inc.
17	Phillips Petroleum Company
18	Diamond Shamrock Exploration Co., Pachulski
19	Utah Wilderness Association
20	Utah Wildlife Leadership Coalition
21	Environmental Protection Agency, Region 8
22	State of Wyoming, Office of the Governor
23	State of Wyoming, Game and Fish Department
24	State of Wyoming, Geological Survey
25	State of Wyoming, Department of Environmental Quality
26	State of Wyoming, Oil & Gas Conservation Commission
27	State of Wyoming, Public Service Commission
28	State of Wyoming, State Historic Preservation Office
29	State of Wyoming, State Engineer's Office
30	State of Wyoming, District 4 Forester
31	Rocky Mountain Oil and Gas Association
32	Diamond Shamrock Exploration Co., Brady
33	Petroleum Association of Wyoming

1

DEAR SIR
IN REGARDS TO THE DEVELOPEMENT OF THE HICKEY MTH.,
TABLE MTH. AREA I WOULD LIKE TO EXPRESS MY CONCERN AS
AN OUTDOORSMAN. I CONSIDER THAT AREA TO BE THE MOST
BEAUTIFUL AND NATURALLY PRODUCTIVE AREA IN UTAH COUNTY.
I FEEL THAT THE ADDITION OF ANY NEW ROADS OR ANY NEW
TYPE OF FACILITY WOULD RENDER THE ALREADY SMALL AND
ENCROACHED UPON AREA TO BE NEARLY USELESS FOR ELK AND
OTHER BIG GAME SPECIES. I THINK THAT THIS AREA SHOULD BE
PROTECTED BY YOU PEOPLE RATHER THAN EXPLOITED.
WHY SHOULD THIS PUBLIC LAND BE RAVED BY OIL COMPANYS
RATHER THAN ENJOYED BY THE PUBLIC. PLEASE DONT DESTROY
THIS AREA.

SINCERELY
LEE LESNEISTR
30 ELK DR.
EVANSTON WY.

Lee Lesneistr

Response to Letter 1

1. The oil companies identified have valid leases which give to them the privilege of exploring for and removing oil and gas. The purpose of this EIS is to determine how to accomplish oil and gas removal with minimum impact on other resources in the area.

2

SAC Cedar Lake
Bureau of Land Management
January 25, 1992

Dear Sir
Concerning the impact of oil
exploration on the Hickey Mountain and
Table Mountain areas:

My father was raised in the
Laramie area so we are familiar
with the situation of the environ-
mental impact on the wild game.
The fact is you would show
respect to the industry, but it would
not be a question. The game has
literally killed themselves on areas
where they could still thrive. The
mountains like antelope are now
depleted.

I fear that if the oil companies
would then local people and look
for an area of study. In this
area it would be well worth
the risk on the environmental risk
to the wildlife of sports
area because it is important that
game is important when there are
so many people in the area.

Respectfully,
Mona Giblin

Response to Letter 2

2. Thank you for your comment. Your concerns for the area will be considered during the decision-making process.

Response to Letter 3

3

RECEIVED

WESTERN WYOMING COLLEGE

JAN 24 1987

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
RSCA SPRINGS, WYOMING

January 22, 1987

Molly Macgregor-Jewell
Bureau of Land Management
Roch Springs District Office
P.O. Box 1807
Roch Springs, WY 82808-1807

Dear Mr. Macgregor-Jewell:

The following comments concern cultural resources issues addressed in the Holey Mountain-Table Mountain Draft Environmental Impact Statement.

COMMENTS

The DEIS analysis of the environmental consequences to cultural resources states that:

"Cultural resources are not considered to be an 'issue' (emphasis yours) requiring special measures." (DEIS, p. 76)

This assessment appears to be contradictory to the data presented in Chapter 3, Affected Environment. The EIS study area is characterized as having a "relatively high incidence of cultural sites, with an average occurrence of one site per 66.8 acres" (DEIS, p. 54). The DEIS notes that the occurrence ratio is high for Wyoming.

Your analysis then states:

"High site density in and around the study area is indicative of the importance of the area to earlier inhabitants, and important present value as a cultural resource." (DEIS, p. 54)

The DEIS analysis also shows that the incidence of significant cultural sites, those sites eligible or potentially eligible to the National Register of Historic Places (NRHP), is very high. Of the 52 recorded sites, 38 would have to be considered potentially significant or potentially eligible to the NRHP. This is 50% of the recorded sites, again a high figure for Wyoming.

Given the high site density and the high percentage of potentially significant sites, development in the study area has a great potential for effecting cultural resources significant cultural sites at that. Your analysis already indicates that conflicts exist between present uses and proposed development plans. Your analysis too estimates that an additional 14 sites could be discovered if full field development takes place. This latter estimate may be low.

3.1

Field :

3

WESTERN WYOMING COLLEGE

It is a practice of oil and gas development to take advantage of favorable topographic situations in placing well locations, roads, etc., to minimize costs. These topographic situations (which include flat ridge tops, valley bottoms, flat bench features) are the same situations where cultural sites occur with the greatest frequency. This means that new sites are likely to be encountered than currently estimated.

Given these facts, high site density, high proportion of potentially significant sites, and conflicts with known sites and your own assessment that the study area constitutes an important cultural resource, cultural resources is an "issue" requiring special measures.

RECOMMENDATIONS

Several suggestions are offered that can aid in the management of cultural resources throughout the life of development activities in the EIS study area and can be applied to adjoining areas if development ensues.

Cultural Resource Treatment Plan

A cultural resource treatment plan should be developed for the EIS study area. The plan should address the following:

1. Known Cultural Resources. The plan should summarize the existing data base detailing types of sites, ages of occupation, and where sites occur and do not occur.
2. Research Orientation. The plan should develop a set of research goals and questions that can reasonably be expected to be applicable to the area. This should be based on information provided by Item 1.
3. Evaluation Criteria. This section should contain a clear concise statement of what criteria will be used to determine site significance. This should be tied directly to Item 2. A discussion of what kinds of sites will generally be considered eligible or not eligible to the NRHP will be included.
4. Methods for Mitigation of Effects. This section should contain a discussion of what will be considered an effect and the appropriate methods for mitigation of effects for each type of cultural resources likely to be encountered. A discussion of preferred methods for mitigation will be included.
5. Responsibilities. Who is responsible for what.

The development of the plan will aid both the permittee and the Agency. It would insure continuity in the management of cultural resources throughout the life of the project. It would remove so much of the guessing game inherent in case-by-case decisions.

Now, comments

I would strongly encourage that the EIS study be remembered at the Class III level. I realize that this may not be practical for the Oil and Gas Units that would have little development. But those units with

Page 2

3.1. You make several valid and helpful comments on the DEIS. BLM/FS recognize the higher than usual cultural resource site density, relative to elsewhere in Wyoming, exhibited by the number of sites and percentage of significant sites known from previous work in the area.

3.2. The text has been corrected to reflect the special management measures that would best protect cultural resources in the area. An inventory and treatment plan methodology is described in Appendix B.

WESTERN WORKING COLLEGE

higher potential for development should receive a 100% inventory. A 100% inventory would make the management of cultural resources much easier and pertinent management decisions more realistic. It would also aid the developer, and probably in the long run reduce the overall cost of cultural resource studies.

Prior knowledge of the number, significance, and location of cultural resources would allow decisions about design and placement of facilities, such as, wells, roads, pipelines, to be made early. Conflicts with cultural resources could be avoided or minimized. This would decrease agency review time and avoid costly delays that can occur when considering cultural resources on a case-by-case basis.

3.2

Another factor favoring 100% inventory is the potential that very sensitive cultural resources exist in the study area. The lack of documentation of these resources could lead to their destruction through secondary impacts. The case of the Harbison Mummy, which came from the area, should serve to make the point. Complete inventory of at least the units with heavy activity would go a long way to prevent this from occurring again.

It should be clear that the cultural resource potential in the EIS study area requires special management measures. The old standard of consideration on a case-by-case basis is not appropriate for the Hickey-Table Mountain area. The development and implementation of a cultural resources treatment plan and the use of 100% inventories would prove to be a benefit to both the oil and gas developers and the Agencies involved. It would also provide protection for and a better understanding of the cultural resources.

Charles M. Love

Charles M. Love, Chairman
Anthropology Department

Sincerely,

Robert D. Crossman
Robert D. Crossman, Director
Archaeological Services

cc. Green River Resource Area Archaeologist
State Historic Preservation Office
Advisory Council on Historic Preservation

Response to Letter 4

4. Thank you for your comment. Your concern for the area will be considered during the decision-making process.

4

*Please go ahead with the
Hickey, Table Mountain project
we could use the jobs & income
for Uinta, Lincoln & Sweetwater
counties.*

The 4 years

*M. G. Simpson
Remember, Wyoming*



United States Department of the Interior

BUREAU OF MINES

F. B. DOX 15086
BULLING 20, DENVER FEDERAL CENTER
DENVER, COLORADO 80215

Intermountain Field Operations Center

January 29, 1967

Memorandum

To: Wally Miazewski, Team Leader, Bureau of Land Management,
Rock Springs District Office, P.O. Box 1869, Rock Springs,
Wyoming 82902-1869

From: Chief, Intermountain Field Operations Center

Subject: Review of draft environmental impact statement for Hickey Mountain-Table Mountain Oil and Gas Development, Uinta County, Wyoming

Thank you for the opportunity to comment on the subject environmental impact statement (EIS). The primary concern of the Bureau of Mines when reviewing EIS's is whether mineral resources and mineral-related industries are adequately considered.

The draft EIS does not indicate whether mineral resources other than oil and gas were considered during its preparation. Strata that may contain substantial coal and/or oil shale are present in the area. We suggest future versions of the document discuss all resources in the area, describe potential impacts to them, and discuss mitigation measures if necessary. If minerals other than oil and gas would not be affected, then subsequent versions should so state.

William Cochran

Response to Letter 5

5. Coal and oil shale occur at respective depths of thousands of feet and several hundred feet beneath the surface of the study area. These depths preclude production of the minerals with known mining practices. The text has been modified to include this information.

6

UNITED STATES GOVERNMENT

memorandum

FEB 05 1987

REPLY TO
ATTORNEY

Division of Programs, Land and Minerals, Code 360

SUBJECT: Hickey Mountain - Table Mountain Oil and Gas Field Development, Draft Environmental Impact Statement

10. Team Leader, Bureau of Land Management, Rock Springs, Wyoming

From: Billings Area Director

The proposed oil and gas field development is nearly 150 miles northwest of the Wind River Indian Reservation. This distance precludes the possibility of adverse impact to the reservation.

Thank you for the opportunity to comment on this Craft Environmental Impact Statement.

Livingstone

Response to Letter 6

6. Thank you for your comment.



Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

[illegible]



BY MAIL ROOM 10

PHWES-43411
AR187A-M234MKT

Memorandum

To: Wally Mierzejewski, Team Leader, BLM, Rock Springs, WY
From: Project Leader, USFWS, Cheyenne, WY (PHWES-43411)
Subject: Review of Hickey Mountain - Table Mountain
Oil & Gas Field Development, DEIS (IC-87/4)

The "issues and concerns" presented in the DEIS adequately identify the major items of concern to us. These include the potential impacts of the proposed action on important fish and wildlife habitats, such as riparian zones, big game winter ranges, aquatic, as well as possible water quality impacts.

Much time and effort has been expended in development of the required standards to mitigate environmental impacts and the general reclamation guidelines (Appendix C). However, if these standards and guidelines are not strictly applied, we question if this will occur. For example, page 11 of the DEIS indicates that surface disturbance for well sites would generally be prohibited within 500 feet of surface water, within riparian areas, and on slopes in excess of 20 percent, if topographically feasible. The required standards for oil and gas field construction and operations have been judged to be the responsibility of the project officer (AO). We believe these protective measures are essential to protect fish and wildlife resources and needs to be uniformly applied to all oil field activities and not left to the discretion of the AO.

- 7.1. Current oil and gas development (page 46) has already caused some damage to the floodplain of the Henry's Fork River due to pipeline construction. Hydrocarbon spills have occurred on two well pads and reserve site fluids have been released into Sage Creek. The DEIS further indicates (page 88) that state water quality standards may be exceeded because of the number of proposed roads and pipeline crossings of Lower Creek in the Lucky Ditch Unit. This unit's proposed processing plant would also pose a groundwater contamination risk. In addition, the proposed location for the Whiskey Springs Unit processing plant in an area of historic land clearing, and the fact that the processing plant has not moved, producing a substantial amount of sediment. This is a concern, since the processing plant is near Sage Creek which contains the
- 7.2.
- 7.3.

M. Mierzejewski
BLM-Rock Springs, WY

2/13/87

Page 2

sensitive Colorado River cutthroat trout. These past and proposed activities threaten to reduce area streams' ability to maintain viable fisheries and could preclude the future use of these streams for improving the status of Colorado River cutthroat. Therefore, we believe it is essential that strict compliance with State water quality standards and operator regulations be maintained to ensure that area aquatic and riparian habitats are protected.

In order to protect area fish and wildlife resources, the following resource measures should be revised and/or amended to Appendix C:

1. Resource measure #5, page 100: Seasonal protection of crucial big game ranges and other important wildlife resources should be applied to all construction activities, not just linear facilities. Any variance to the seasonal sensitivity of wildlife resources should be coordinated with and have the approval of WFO pertaining to resident wildlife, and WFO and FWS including migratory birds. The following seasonal protection should also be applied to these resources: Re-created hawk nest (within 1/2 mile), April 15 - July 15; abandoned hawk nest (within 1/2 mile), May 1 - August 30; goshawk nest (within 1/2 mile), March 1 - July 31.
2. Resource measure #7, page 100: No exceptions should be permitted for this important stream and wetland protection measure.
3. Resource measure #10, page 100: We concur with the requirement of a fisheries and surface-water quality monitoring program. This requirement needs to be expanded to require that remedial actions be implemented if monitoring reveals pollutants, toxic substances, or violation of State water-quality standards.
4. Resource measure #12, page 100: If construction activities are conducted within 1/2 mile of a prairie dog town, the AO should consult the FWS biologists, Northern Continental Shoshone office pertaining to the latent black-footed ferret clearance procedures and the need to survey the town.
5. Resource measure #26, page 100: All disturbed riparian wetland habitats should be restored to their original vegetation type or mitigated. In cases where cottonwoods and willows are removed, they should be replanted at a density equal to or greater than that which existed prior to disturbance.
6. Resource measure #33, page 100: Page 70 of the DEIS indicates that a stipulation would be developed to protect the sensitive plant population of *Impatiens* *humboldtii* in the study area. We could not find a stipulation in the resource measures pertaining to the protection of this species. Due to the sensitivity of this plant, we recommend that this resource measure be developed and incorporated into the required lease stipulations.

Response to Letter 7

7.1. Flexibility in application of stipulations would be used to minimize environmental effects of an action; or to allow an action to occur when previously anticipated impacts are proven negligible. Uniformity in application would be ensured by the Implementation Task Force, discussed in Chapter 4 (added text).

7.2. Referenced statement on page 65 was in error, and reflected activities occurring without appropriate mitigation measures which would be required. Text has been corrected.

7.3. Site specific location of the Whiskey Springs Plant would be determined after an on-the-ground inspection by an interdisciplinary team. This team would consider actual conditions and apply appropriate measures, including alternative siting. In this specific case, a site analysis showed gentle slopes and no evidence of previous mass movement. Risk would be minimal as long as the site is not allowed to cut into or expand out onto surrounding steep slopes.

7.4. The first measure has been changed to include construction of all facilities, and not linear facilities only. The second measure has been modified to include the additional three seasons/species.

7.5. The measure has been modified to require remedial action.

7.6. Consultation will be initiated as required.

7.7. Except where riparian vegetation is replaced by a bridge embankment or similar permanent structures of large fill, reclamation of wetland sites will include willow/tree planting as appropriate. Our intent is to vegetate the fill slopes as quickly as possible to reduce erosion and stream sedimentation.

7.8. A stipulation for avoidance of this species has been added to Appendix B.

7.9. Measures addressing activities on limiting slopes have been added in Appendix B. A restriction of slopes greater than 20 percent would not be necessary in severe landslide areas as these are avoided anyway. In moderate to high landslide hazard areas, the 25 percent slope restriction should be adequate with site specific determination.

7.10. Mr. Lockman has provided us with helpful information regarding occurrence of whooping cranes in the area and necessary protection measures, which have been included in the text.

7

7.0

7. Resource measure "water shed": Due to the sensitivity of the area for fishery resources and the occurrence of significant soil slumping occurs (page 63) throughout the study area, we recommend that a stipulation be implemented to restrict development on slopes greater than 20 percent. In areas containing unstable soils (slides and slides), we recommend that development be restricted on slopes greater than 20 percent. This is consistent with guidelines and concerns discussed on pages 62 and 63, and D11 and Gas Technical Bulletin No. 1 (BLM, Wyoming State Office 1981). This Bulletin states that development on 20-25 percent slopes is classified as "severely limited," and that oil and gas field production should be restricted unless erosion controls can be ensured.

We suspect that construction on slopes in excess of 20-25 percent may be commonly permitted, since some existing lease stipulations allow work on slopes up to 40 percent (T224, R1334, Ser. 3 and Ser. 10). We recommend that existing lease stipulations be re-evaluated and modified, in light of the above concern.

Regarding threatened and endangered species, we have reviewed the biological assessment (BA) incorporated in the DEIS. BLM arrived at a "no effect" determination for the bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*), whooping crane (*Grus americana*), and black-footed ferret (*Mustela nigripes*). We concur with BLM's "no effect" determinations based upon information presented in the BA and DEIS, discussions with BLM personnel, and the following BLM comments:

1. Black-footed ferret surveys will be conducted on prairie dog (Cynomys sp.) towns located within 1/2 mile of the study area;
2. Powerlines will be raptor-proofed pursuant to the specifications in "Suggested Practices for Raptor Protection on Power Lines" and
3. Powerlines crossing rivers and wetland areas be marked to increase visibility to prevent raptor or whooping crane collisions.

Black-footed ferret survey reports should be submitted to our Helena Field Office for review and concurrence prior to disturbance in prairie dog towns. We recommend the BLM contact Dave Lockman, Wyoming Game and Fish Department (307-536-8600/337-0321) regarding state-of-the-art techniques for marking powerlines to increase visibility and prevent crane and raptor collisions. In addition, bird collisions with powerlines could be significantly reduced if lines are strung on a single plane horizontally, instead of above one another, across important bird flight paths, such as riparian zones and wetlands.

7.10

7

Please contact Carol Taylor at 585-5225 in our Helena Field Office if you need further assistance regarding endangered species.

We encourage BLM's favorable response pertaining to the questions we have raised, and we look forward to their inclusion into the FEIS and implementation in the field.

Arthur Anderson

cc:
Assistant Regional Director, USFWS, Denver, CO (PWE-60120)
Field Supervisor, USFWS, Billings, MT (EG-61410)
Field Supervisor, USFWS, Helena, MT (SE-61330)
Director, AGFD, Cheyenne, WY
Elaine Reper, AGFD, Green River, WY
ES/BCD, Washington, D.C.

Response to Letter 8

WYOMING COUNTY INDUSTRIAL COMMISSION

EVANSTON, WYOMING

(307) 789-5603

February 10, 1987

Molly Hierszewski
Bureau of Land Management
Rock Springs District Office
P.O. Box 1849
Rock Springs, WY 82901

Re: Comments in favor and support of the Hickey/White Mountain drilling and plant construction proposal.

Dear Mr. Hierszewski:

This correspondence is being forwarded to you in behalf of Uinta County Industrial Development Corporation in an effort to demonstrate support of the aforementioned project.

Uinta County Development Corporation is a partnership between private businesses, Blaine County and the City of Evanston, Wyoming. Although we do not represent the County and City Governments as a whole, we have a strong contingent of supporters as represented by several key signatures contained below.

As team leader of this project, we wish to express and direct your attention to several items. Firstly, we are very much in support of this project from the standpoint of providing an economic lease to an area that is experiencing SEVERE economic problems. We feel that this project would provide both jobs and revenue base for all of Southwest Wyoming.

It has been our experience that projects of this magnitude provide not only private sector jobs, but significantly support and enhance virtually all of the public sector activities. We feel that a prime example of this are the cities in Uinta County which have directly benefited via new schools, recreation centers, etc. which were partially funded via efforts over and above those realized of the same group of companies listed in the Draft EIS.

Secondly, we feel that with cooperative efforts between the private companies listed in the EIS and someone similar to your team, that environmentally sensitive issues can be addressed and presented without imposing unreasonable time and monetary constraints. It is the opinion of this group that the oil & gas industry as a whole has done a very admirable job of protecting Wyoming's environment.

8.1

8

8.1. The Hickey Mountain - Table Mountain project is of a small scale when compared with other projects that have provided direct mitigation monies to local communities. The Wyoming Industrial Siting Commission has jurisdiction over projects where industrial projects are estimated to cost at least \$90 million. For this project, maximum costs for plants are estimated at \$10 million or less.

8.2. Thank you for your comments. Your offer of assistance is appreciated.

-2-

8

8.2

Finally, as a group of businessmen and citizens with a primary goal of keeping Wyoming the great state that it is, we cordially offer our services in assisting in resolving issues surrounding this project. We commit ourselves to the symbolic relationship expressed on the Great Seal of this state "Business, Industry and Government Working Together."


Please contact us at your convenience if we could be of assistance.

Very truly yours,


Gary M. Stewart
Board Member UCIDC
G. M. Stewart Corporation
789-1662


Dave Blackburn
Board Member UCIDC
789-2721


John A. Robinson
Board Member UCIDC
President First National
Bank in Evanston
789-3064


Duane Hill
Board Member UCIDC
Manager Post Western Dismal Inn
789-3770


Doug Dyer
Ex-official Member UCIDC
Uinta County Commissioner
789-1780

cc: Governor Sullivan


Walter Reed
Board Member UCIDC
Regional Manager - D.P.B.
789-2455


Alan Graham
Board Member UCIDC
President First Wyoming
Bank of Evanston
789-6420


Robert Spence
Board Member UCIDC
Superintendent of Schools,
Uinta County
789-7571


Clark Anderson
Ex-official Member UCIDC
Uinta County Commissioner
789-1780


Duane Rumber
Ex-official Member UCIDC
City of Evanston
789-9450



United States Department of the Interior

695 Parker Street
P.O. Box 25267
Thousand Oaks, California 91324

5.7619 (MCD-PP)

FEB 13 1963

Memorandum

To: Environmental Impact Statement Team Leader, Rock Springs District
Office, Bureau of Land Management, Rock Springs, Wyoming

From: Associate Regional Director, Planning and Resource Preservation,
Rocky Mountain Region

Subject: Hickey Mountain - Table Mountain Oil and Gas Field Development
Draft Environmental Impact Statement, Uinta County, Wyoming
(DPS 86/50)

We have reviewed the subject document and have determined that the proposed development will have no effect on lands or programs administered by the National Park Service.

Richard A. Scratt

9

Response to Letter 9

9. Thank you for your comment.

10

Dear Wally,

10.1 I am writing in response to the (EIS) in
proposals for a new field development in the Midway
Mountain - Little Mountain area. I have noted that
you are about 100 years old & find it is critical
that you be successful. Eels, deer, and some more
live in the area upon which development are now
under way. Midway Mountain, it follows the line
of activity in the area, on the public lands.
The better it will be for wildlife in the area.
All at all possible building a world be done at
midway be deep water, you are required by
wildlife, and a little deer. On Midway Mountain
wildlife could be in the open areas and not in
the timber.

10.2 I would encourage you not to close this
a way off for painting, not because of the oil, I would
hope that the existing roads and tracks could still
be used very conveniently.

Please write me the final £1.5

Sincerely,
Gordon Heath
G. 2901
Durham, WY. 82437

Response to Letter 10

10.1. Thank you for your comments. Your concern for the area will be considered during the decision-making process.

10.2. Any closure of roads to public vehicle traffic would be done to minimize disturbances to elk, deer, and moose in the area.



11

Southern Policy Mountain District
Exploration Lease SaleP.O. Box 150
Casper, Wyoming 82402
Telephone 307/638-2511

February 24, 1987

Mr. Wally Mierzejewski
Team Leader
Bureau of Land Management
District Office
P. O. Box 1869
Rock Springs, WY 82402-1869

Dear Sir:

Re: Comments on the Riskey Mountains-
Table Mountain Draft EIS

- 11.1 After commenting on the Environmental Assessment for this area earlier, there is no indication as to which areas are significantly impacted by the proposed action. Identification of these areas would help in focusing comments of impacts with full field development.

As a rhetorical question, giving more credence to the analysis presented, it seems that a no action alternative could discuss the unrestricted development of the area. This would show how the stipulations and mitigating measures, developed in the documentation, actually contribute to environmental protection. Additionally, it would not entail the taking of property rights as the alternative presented indicates. This comment is presented for future reference and does not need a response.

- 11.2 According to the discussion on Page 37, the Wyoming Game and Fish Department's elk population objective is approximately 800 head, from the current 350 head, for the Horse-Cedar Mountain herd unit. If the study area contains 275 of the elk carrying range with the Uinta-Cedar Mountain Elk herd unit, as stated on Page 37, how can the W.G.F.D. realistically expect to almost double the herd unit with approximately 45,776 acres of calving status available to the herd? Additionally, there seems to be some discrepancy in that the Final Waasatch-Cache Land and Resource Management Plan EIS states that the W.G.F.D. objective is 350 head of elk in this unit.

Response to Letter 11

11.1. A description of anticipated significant impacts has been added to the Introductory Section of Chapter 4.

11.2. This section has been clarified to indicate that the objective increase would be for the entire herd unit, which includes acreage and habitat outside of the subject study area.

11.3. Thank you for these comments. The use of "significant" and related adjectives has been revised and clarified.

11.4. Much existing recreation related vehicle use occurs on primitive roads and off-road within the study area. This use would be prohibited by introduction of a supervisor's closure to all but designated roadways on National Forest portions of the study area.

11.5. Potential royalties to federal and state governments would be foregone under the No Action alternative; however, quantifying the potential loss is impossible.

11

Mr. Wally Mierzejewski
February 24, 1987
Page 2

- 11.3 The Environmental Consequences Chapter seems to be lacking in several areas. First, there is no definition of significant in the glossary and, therefore, it is used inconsistently. Second, terms such as "important adverse impacts" and "adverse impacts" are used for different purposes; see pages 38 and 63 for examples. There is no consistency in the usage of these terms.

Under Visual Resources, Hydrocarbon Processing (Pg. 67), the phrase "highly significant impacts" is used.

- 11.4 The statements on Page 70, under Recreation, is unfounded. The text reads: "Oil and gas development, and associated vehicle use, would change existing recreation use and patterns." The area has an existing oil and gas field, Bridger Lake, to the south of the study area. The roads to this area are plowed in winter and provide the majority of recreational use for the area according to Table 3-3.

- 11.5 The Socio-economic impacts of the No Action alternative, as presented, would be significant. The loss of revenue from this alternative would be considerable to the local and state economies and impact the national economy.

The overall presentation in the EIS seems to provide the disclosure necessary in NEPA documentation.

Thank you for the opportunity to comment on this document.

Sincerely,

Bradley C. Penn
Bradley C. Penn
Land/Environmental Coordinator

BCE/rmg

cc: W. E. Ritter
E. M. Grant
T. L. Lindsey
J. D. Pollalis
B. D. Rine, Jr.
J. D. Wilson

(87-00-00)

SUN

Bureau of Land Management
Buck Springs District Office
P.O. Box 1869
Buck Springs, Wyoming 82802-1869
Attention: Wally Mierzejewski

Dear Mr. Mierzejewski:

Sun Exploration and Production Company has made a thorough review of the Draft Environmental Impact Statement on proposed oil and gas field development in the Alkany Mountain - Tails Mountain area of southwest Wyoming, and we have provided the following specific comments to be addressed in the final environmental impact statement.

12.1

- Page 1. - The initial note from Sun's Lucky Ditch No. 1 was 7.6 HMGPSD, not 7.5 HMGPSD.
- In the Lucky Ditch unit, Sun has drilled four producing wells, and is currently drilling one well and completing another.
- Page 7. - Sun's proposed Lucky Ditch unit development includes 15 production wells.
- Page 8. - (Map 2-1) Sun's proposed Lucky Ditch unit development includes 20 producing wells and 2 injection wells. See attached revised plan.
- Page 9. - (Figure 2-1) A more accurate drilling schedule is provided in our 1987 Plan of Development.
- Page 11. - Sun plans to line the pit with a suitable material such as bentonite gel or other method as authorized. In addition, all drilling wells will include surface casing to protect freshwater zones.
- (Paragraph 4) The drilled well would include Surface Casing, which is cemented all the way back to surface, to protect fresh water sands and to install blowout preventers to shut off any unwanted flow from deeper zones. The drilling mud is used to control any formation fluids and pressures that are encountered.

1P4/1668

12

February 26, 1987

Sun Production
Operations Division
Rushy Mountain District

Sun Exploration and
Production Company
2000 West
Tulsa Avenue
Tulsa, Oklahoma 74101-1584
301.289.3000

Response to Letter 12

12.1. Modifications have been made to the text as appropriate.

12.2. The AO will require measures to meet specific reclamation objectives. Alternative measures that would ensure proper reclamation of mud pits will be considered.

12.3. The exact width of disturbance from road construction will vary greatly due to local topography, soil, and vegetative factors. In some areas, disturbance can be limited to a 30-foot width. In others, 50 feet of disturbance may be exceeded, although in rare cases. The 50-foot disturbance width was considered maximum disturbance for analysis purposes.

12.4. Modifications to the text have been made as appropriate.

12.5. "Zero discharge," which is now called "controlled discharge," in this case refers to runoff from a constructed site. A common problem with sites such as these is snow storage (snow fence effect) and snow stockpiling (from snow removal equipment). This tends to increase the amount of runoff from the area, thus forcing existing ephemeral streams to carry large volumes of runoff. This results in channel incision and head cutting. The company must plan (over design) for total storage of this snow melt and storm events with long-term plans for evaporation, irrigation, and regulated discharge, after reclamation success. (Rates of discharge would be determined by the watershed specialist of the respective agency in concurrence with the AO.)

12.6. Modifications to the text have been made as appropriate.

12.7. The exact width of pipeline construction will vary due to local topography and the amount of large boulders/bedrock along the route. The 70-foot disturbance width was considered the average maximum disturbance for analysis purposes.

12.8. Discussion of external power source has been added to Chapter 2.

12.9. Modifications to text have been made as appropriate.

12.10. Seasonal restrictions to prevent disturbance to big game would be applied to timber harvest as they are applied to project activities.

12.11. *Suggested Practices for Raptor Protection on Powerlines* is a publication which presents appropriate protection measures. Other measures which would provide adequate protection may be considered by the AO; however, these published practices have been readily accepted by industry.

12

12.2

- Page 11. - (Paragraph 3) Sun does not feel that solidifying muds with cement should be required. It is a very expensive process and rarely successful.

Page 12. - (Figure 2-2) Had house should be mud house.

Page 13. - (Collector Roads) If the Forest Service plans to close to the public, the existing access road to Sun No. 1 (from the southwest) at the boundary of National Forest and State lands, it must be remembered that Sun will require continued access at this point for the No. 3 and No. 4 producing wells, as well as any additional wells successfully completed.

12.3

- Page 14. - (Local Access Roads) Sun is assuming disturbances of 30 feet in width for road construction, remaining at 20 feet permanent road right of way.

12.4

- Page 14. - (Last Paragraph in the Left Column) The American Quasar No. 20-24 is now Sun's Lucky Ditch Federal "P" #8 and the access road comes in through the Lucky Ditch Federal "P" #8 location.

Page 14. - (Paragraph 3) The total length of the proposed loop road from well #2 to well #1 will be 3.2 miles of new construction. A bridge crossing and 0.9 mile of road will be required for access to well #6 in Section 21. This access road would then be continued to Well #3, approximately 2.3 miles of new construction.

Page 14. - (Paragraph 4) The terms "hydrocarbon processing plant" and "production facilities" should not be used interchangeably and should be clarified. Production facilities are necessary for initial or primary separation of oil or condensate, natural gas and water. A gas processing plant is used to remove the heavier hydrocarbons from the natural gas stream with dry gas and volatile liquid products as end results.

12.5

- Page 14. - Sun's plans include designs for zero discharge from plant, except that some liquid hydrocarbons. Our rationale is that results containing liquid hydrocarbons will be located within diked areas for spill containment. Storm water run off should be allowed from plastic areas that are not subject to spills or leaks.

12.6

- Page 14. - Sun estimates the life of the field to be 20 to 30 years.
- Page 14. - Table 2-2 should be labeled Proposed Action Hydrocarbon Processing Plants.

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- Table 2-3 under "(Powerline Mile)" should be changed from 0 to 0.5 with reference to Sun's anticipated disturbance.

- [Paragraph 4] The location of a plant site in the Lucky Ditch Unit would not affect the quantity of oil or condensate piped across Henrys Fork. Production from producers southeast of Henrys Fork will be transferred to production facilities in Section 16 until a satellite for these wells can be justified. If a satellite is installed, oil or condensate will still have to be piped across Henrys Fork to Section 16 and shipped out through the main oil trunkline.

- Table 2-2 and Table 2-3 Add Sun's preferred alternative plant location.

Page 18. - Table 2-4 The plant production rate 50,000 BPD is not correct. This number referred to oil storage only in the data previously submitted.

- [Paragraph 3] Sun will take mitigating action to control excessive surface runoff and erosion.

- [Paragraph 9] In the first sentence the word "plants" should be changed to production facilities. Sun proposes that its produced water will be disposed of via waste water disposal well when economically feasible to do so. Water is currently trucked from the production facilities to an approved disposal site.

- Comment: Sun anticipates a total of five full time workers to run its gas processing plant.

Page 17. - (Product Transport) At present, Sun's plant product is trucked out of the field, oil is pipelined and gas is pipelined. However, it should be noted that the need for trucking of oil or condensate in the future should be planned for an emergency basis.

- Additional comment: Plant product will continue to be trucked out of the field until a pipeline can be economically justified.

- [Pipeline] Pipeline construction will require 80 feet during construction, reduced to a 30 foot permanent right of way.

Page 19. - (Power Source) It is uncertain at this time who will provide the electricity to provide power to our hydrocarbon processing plant.

- First paragraph to read - "Local transmission line capacity would require upgrading as needed for future development".

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- Second paragraph to read - "Follow the access road system where feasible to proposed plant sites".

- Third paragraph - The 40' clearance is needed at the powerline level to avoid tree contact so reclamation could occur for seeding ground cover only.

- (Collector Road Alternatives) The Sun loop road from East Lucky Ditch to West Lucky Ditch is necessary in Sun's long range development plan.

- (Abandonment) Upon abandonment, all above ground facilities will be dismantled and reclaimed in accordance with the site abandonment plan.

Page 20. - (May 2-2) Sun's preferred gas processing plant site is in Sh Section 21, and located on Fee Land.

Page 21. - (Processing Plant Alternatives) Sun's preferred gas processing plant site in Section 21 is located southeast of Henrys Fork River and would require one wet gas transmission line and one dry gas transmission line crossing the river.

- [Paragraph 4] The term "hydrocarbon" is misleading as it has been used. Only unprocessed gas would be piped across the river to the plant and a trunkline carrying dry gas would recross the river at the same point and would be connected to the main gas trunkline leaving the field. The location of a plant site in the Lucky Ditch Unit would not affect the quantity of oil or condensate piped across Henrys Fork. Production from economic producers southeast of Henrys Fork will be transferred to the production facilities in Section 16 until a satellite for these wells can be justified. If a satellite is installed, oil or condensate will still have to be piped across Henrys Fork to Section 16 and shipped out through the main oil trunkline.

Page 22. - (Agency Preferred Alternative) As mentioned, Sun's preferred gas processing plant site is located in Section 21.

- From a collector road perspective, Sun considers the loop road from East Lucky Ditch to West Lucky Ditch to be a logical alternative.

- Trucking of oil or condensate in emergency situations needs to be included as a viable transport alternative. Plant product will continue to be trucked until a pipeline can be economically justified.

104/1668

12.12. Your concern for safety within the project area is noted and appreciated.

12.13. A discussion of water quality monitoring and fisheries monitoring has been added to Chapter 4. Additional discussion of wildlife monitoring also appears.

12.14. Modifications have been made to the text as appropriate.

12.15. See response to 12.11.

12.16. Due to the potential for discovery of significant fossil resources, a qualified paleontologist will be required by the AO to be present during construction activities on the Bridger Formation. The agencies do not have a qualified paleontologist on staff. Further discussion on the necessary qualifications for this paleontologist has been added to the text of the cited measure.

12.17. Your concern for safety within the project area is noted and appreciated.

12.18. Modifications to the text have been made as appropriate.

- Page 24. - (Table 2-6) Sun has a long term development plan which includes construction of the loop road between well No. 6 and well No. 1. The road from well No. 2 to well No. 6 is needed as an access road to well No. 6.
- Page 25. - (Table 2-8) Sun's preferred gas processing plant site is located on fee land in Section 21.
- Page 26. - Under development (No Action) remove - "1000 KW capacity)" from sentence, it is not necessary to state. Under full field development change - "2,250 KW" to "10 to 15 MW", due to possible installation of electric driven gas compressors.
- Page 42. - (Threatened and Endangered Species) this deals with concern for eagles, ospreys, falcons, whooping cranes and other birds. There has been active oil and gas operations in the Aransas Wildlife Refuge in South Texas for approximately 40 years. This is where the Whooping Cranes winter and have increased their number.
- Page 45. - (Watershed) It should be noted that Sun has been operating and producing a number of wells within the study area for approximately two years and to date, no significant damage has been caused by spills or other environmental incidents.
- Page 46. - (Transportation Systems) Current and anticipated levels of oil and gas development and timber harvesting operations indicates the need for the oil companies, as well as the timber purchasers using these roads, to agree to a joint road sharing maintenance agreement.
- Page 49. - (Road Density Issue) It should be noted that Sun's road reclamation program has enabled conformance with National Forest road density standards by reclaiming existing Forest Service roads in equivalent mile-for-mile lengths for newly constructed roads within National Forest boundaries.
- Page 55. - (Paleontological Impacts) The Bridger Formation is noted as a source of vertebrate fossils. While only 318 acres of 11,498 acres total Bridger Formation occurring as surficial geology in the study area will be disturbed, this could result in the discovery of new vertebrate fossils. It should be noted that according to the Geologic Map of Aquelung Lodge, 1985, the Bridger Formation occurs as surficial geology over approximately 1,000,000 acres of southwest Wyoming.
- Page 59. - (Access Roads) You also state that the habitat indirectly affected by roads, which would result in avoidance behavior by big game, would range from 5,552 acres to 11,104 acres. We have in the recent past, seen moose on our No. 1 production facility site, and elk herds have been sighted on drilling locations on a number of occasions.

1P4/1668

- 12.10 Page 60. - (Cumulative Impacts to Big Game) The Oil Industry should not be kept from drilling operations when loggers are allowed to cut trees. In the same area.
- 12.11 Page 61. - Under impacts to raptors, last sentence change "electrocution-----" to read "Industry accepted standards and practices will be followed on protecting raptors from electrocution."
- Page 68. - (Specific Impacts on Watershed) We have a company policy against using chromates and have had for several years. Surface casing is set to protect fresh water sands from contamination by drilling fluids or production fluids.
- (Processing Facilities) Sun's gas processing plant would produce and store on site lighter-than-air hydrocarbons in pressurized storage tanks. These hydrocarbons would vaporize to a gas when the storage pressure is reduced to atmospheric.
- Page 66. - (Collector Road Alternatives) You state that preclusion of the Henrys Fork River crossing would reduce potential impacts on this major stream from potential hydrocarbon spills from oil trucks using the bridge. It should be kept in mind that present, as well as future, transportation of plant product will be by truck and the truck routing involving an old culvert-type bridge which crosses Henrys Fork River near the present site of the Phillips Gas Plant. Sun's planned loop road between the No. 2 well and the No. 1 well calls for construction of a well designed and carefully engineered bridge across Henrys Fork river. This bridge is required for access to well No. 1.
- (Visual Resources) It should be noted that Sun has had ongoing production operations within the study area for approximately two years and impacts on visual resources have been significantly minimized by attention to form and color to blend with the surrounding environment by painting production equipment with U.S. approved "Standard Environmental Colors".
- (Processing Plant Alternatives) Refer to comments regarding the quantity of oil or condensate placed across Henrys Fork. Pages 14 and 21.
- Page 70. - (Specific Impacts on Recreation) The least impact on recreational travel opportunities would occur with the construction of the loop road from Sun No. 2 to Sun No. 1 by substantially reducing industry traffic in the western part of the Lucky Otter Unit and within the National Forest boundaries.

1P4/1668

- 12.12 Page 71. - (Processing Plant Alternatives) You have suggested that an urban setting be avoided in our processing plant location by the use of an island of trees separating the various processing equipment. This could pose a serious fire hazard.
- Page 73. - (Specific Impacts on Timber Management) Not all of our locations are in timber. Several of our locations are on the prairie and the ones in the National Forest have not been in heavy timber.
- Page 75. - (Full Field Development Alternatives) There may be more than 5 drilling rigs operating in the general area at one time.
- Page 77. - (Health and Safety) With the imminent increase in wildfire hazard because of the mountain pine beetle epidemic, additional airports and property may be at risk. With this in mind, the plant location in Section 18 located in a heavily timbered area may not be desirable.
- Page 77. - (Air Quality) The total emissions from Sun's production and gas processing facilities will increase as field production increases. In anticipation of this increase, we are presently working with the Wyoming Department of Environmental Quality to develop mitigation measures as needed.
- Page 78. - (Summary of Environmental Consequences) It should be noted that Phillips Petroleum has not ongoing production operations immediately adjacent to the Lucky Ditch Unit for approximately 30 years with minimal adverse impacts to wildlife. The area has continued to support populations of elk, deer and moose in the long term.
- Page 81. - (Appendix E) This Environmental Reference Report should eliminate the need for individual environmental assessments for future wells. In addition, future APD proposals immediately surrounding the study area should be considered within the scope of this EIS analysis. If the projected impacts are similar and the cumulative impacts analyzed in this EIS are not exceeded.
- Page 100. - (Appendix C) Garbage and other refuse will be stored in containers at all times and disposed of as needed. Used engine oil which is changed on Federal Lands will be stored in suitable containers and disposed of as per EPA regulations.
- Page 102. - (Appendix C) You state that the companies would be required to implement a fisheries and surface water quality monitoring program. We assume the cost is to be shared among all operators within the study area, and may thus cause conflict with operations within close proximity to Henrys Fork River.
- 12.13 Item No. 6 - Add 40' R.O.W. needed for powerline clearance from trees.
- 12.14

104/1608

- 12.15 Item No. 14 - Replace first sentence with "The company shall design and construct transmission or powerlines in raptor areas to industry accepted standards for protection of raptors". In the last sentence change "suggested practices for raptor protection" to "industry accepted standards and practices for the protection of raptors".
- Page 104. - (Appendix C) Power distribution lines within the Lucky Ditch Unit will be aboveground, and as you have stated in the EIS, we will take the necessary electrocution prevention measures to prevent raptor electrocution problems. In addition we will comply with your request as much as feasible to reduce reflection and visibility of the transmission line towers by requiring a dull finish.
- With reference to the clearing of rights of way, permit areas etc. we suggest deletion of the possible requirement that a landscape architect assist in the design of the clearing plan.
- Page 105. - (Appendix C) Since we have in the past provided archaeological - cultural surveys we will continue to provide the same as needed in the future. However, we suggest reconsideration of the statement that a paleontological survey be conducted.
- 12.16
- 12.17 - A maximum of 25 MPH speed limit will be observed by Sun Company personnel and contractors.
- 12.18 - The company shall be responsible for preventive and corrective road maintenance, on the basis of shared road usage.

We thank you for the opportunity to provide comments on the Hickey Mountain - Table Mountain Draft Environmental Impact Statement. We ask that you address our comments in the Final EIS, and that you seriously consider our rationale in the decision making process.

We value the effective lines of communication that have been established with your agencies, we appreciate your efforts in the past and look forward to working with you in the future.

Preservation of the environment in which we live and work is important to Sun and we will make every reasonable effort to ensure that our operations continue to preserve and protect the sensitive ecosystem. Proper planning and cooperative efforts will assure solutions in coexistence.

Sincerely,


 Dennis C. Capper
 District Right of Way/Claims &
 Environmental Representative
DC/dr
104/1608



13

February 26, 1987

Mr. Wally Mierzejewski, Team Leader
Bureau of Land Management
Rock Springs District Office
P.O. Box 1819
Rock Springs, Wyoming 82901

Re: Hickey Mountain/Tabla Mountain Area - Oil and Gas Field
Development - Draft Environmental Impact Statement

Dear Mr. Mierzejewski:

13.1

Wyoming Power & Light Company (WPLC) appreciates the opportunity to provide the Bureau of Land Management and the Forest Service with our comments on the subject DEIS. WPLC is concerned that the subject DEIS does not adequately identify the electric power needs and sources of the proposed oil and gas field development project. The Resource Management Plan/EIS for the Hammer Resource Area also did not address any utility corridors to the proposed development area. WPLC requests that the BLM expand the scope of the DEIS, Chapter 2, Power Source section, to include a proposal from WPLC to construct a transmission line and substation to serve the project.

The required electrical demands of Sun Exploration and Production Company (estimated at 3 to 15 MW/year), as well as the load potentials of the other seven oil and gas companies, have not been fully defined. It is, however, apparent that the existing service to the site does not have the capacity to handle the increased load. WPLC's proposal to deliver power to the project would satisfy the minimum projected load requirement if full field development occurred. WPLC has no obligation to provide its customers with safe, reliable electrical service as economically as possible within the established environmental guidelines. It is within these customer obligations and environmental guidelines that the enclosed proposal has been prepared by WPLC to provide the electricity to power the hydrocarbon processing plants for the Hickey Mountain/Tabla Mountain area oil and gas field development.

Again, we appreciate the opportunity to comment and hope that our input will be included in the development of the final EIS.

Sincerely,

Jim Burrows
Bureau of Land Management
Environmental Analyst
JLB:Jab

Response to Letter 13

- 13.1. A discussion of external power needs and sources has been added to Chapter 2.

500 Lakes West Road
Box 447
Northbrook, Illinois 60062
Tel: 312/464-1000
Fax: 312/464-1001

14



CRANBROOK INSTITUTE OF SCIENCE

February 25, 1987

National Heritage
and Science Museum
Bureau of Land Management
P.O. Box 1819
Rock Springs, WY 82902

Dear Mr. Mierzejewski:

I write after receiving a copy of the draft EIS for the Hickey Mountain-Tabla Mountain area of southwestern Wyoming.

14.1

I am truly surprised that the University of Wyoming does not appear to have participated in the preparation of this document. Many of the faculty and students, as well as other scientists, could have contributed significantly to this report. Further, looking specifically at the fossil resources, I am truly distressed that neither professional paleontologists nor the Society of Vertebrate Paleontology were consulted. This is particularly significant in view of the importance of the Bridger Formation in the formation of North American Land Mammal Ages.

14.2

As I read the observations about the fossil resources of the Hickey Mountain-Tabla Mountain area, I find it disconcerting that 1) none of the 20+ papers I published since 1940 have been cited; 2) none of the numerous papers published by Matthew, Gashin and others show the fact of the country were cited; and 3) that no professional vertebrate paleontologists with knowledge of the southern Green River Basin were involved. In saying this, I do not intend to deprecate Mr. Postur. I merely question the omission of several obvious sources of information.

The discussion of paleontological resources on pp. 54-55 is a gross understatement. The specimens in the collections of Yale Peabody Museum, the American Museum of Natural History, the United States National Museum

Response to Letter 14

- 14.1. Dr. Lillegraven at the University of Wyoming was sent a copy of the DEIS on January 15, 1987. Apparently, he also received a courtesy copy of your scoping comments sent to us in November 1985. We have received no comments from Dr. Lillegraven to date. As you were known to be familiar with paleontological resources in this area, you were asked to provide input to this process beginning with formal scoping in 1985.
- 14.2. The purpose of an EIS is not that of a research paper. The EIS identifies the paleontological resources that are present in the area, and provides mitigation measures to protect them.
- 14.3. Mitigation measures for paleontological resources have been revised to reflect the important paleontology of the area.
- 14.4. Thank you for your helpful comments. We appreciate your concern for this special area and welcome you or others in the scientific community to assist in the monitoring process. Because BLM and FS do not have paleontologists on staff, our proposed methodology would consist of construction monitoring, or be driven by potential discoveries as they may occur.

Mr. Wally Wierzejewski
February 26, 1987

Page 2

of Natural History and the Milwaukee Public Museum exemplify the abundance of materials to come from the upper part of the Bridger Formation. And the areas adjacent to Wyoming Highway 414 at Henry's Fork Divide are among the most productive parts of the formation.

The Rock Springs BLM office has records of my last several field seasons. The localities recorded there are only a small part of the localities collected in that small area to this time. My own experiences, based on work starting in 1969, is that virtually every exposure within the Henry's Fork Divide area (T12N, R13W, sec. 8, 9, 10, 16, 17, 20, 21, 22 and 23N, R14W, sec. 11, 12, 19, and 20) is or will prove to be fossiliferous. Thus, no matter what part of the Bridger Formation is developed, for whatever purpose, there will be an impact upon the paleontologist resource. Further, many areas along the southern flank of Hickey Mountain were exposed late in the 19th Century but now are covered by vegetation. Local activities may reverse this process. I do not suggest that such a development is necessarily an improvement.

As suggested on p. 77, new roads might provide new information on Bridger Formation fossils; the improved access has other problems associated with it, as well acknowledged throughout the report.

- 14.3 Finally, I want to comment on the mitigation efforts suggested on page 103. The statement does not indicate what is meant by a "qualified paleontologist" or what the word "values" means. As one who is very concerned about the paleontology of the southern Green River Basin, I think appropriate definitions should be given.

- 14.4 I do hope that the BLM will carefully monitor all phases of development in the Hickey Mountain-Table Mountain area. I gladly offer my own paleontological expertise in support of careful and thorough evaluation of the specimens that will be discovered.

Mr. Wally Wierzejewski
February 26, 1987

Page 3

Enclosed is a photocopy of a part of the Lone Tree 7.5 minute topographic map with some Milwaukee Public Museum localities marked; there are many more, collected by other institutions, which are not on this map.

Thank you for your attention to this; I look forward to your response.

Sincerely,

Robert M. West

Robert M. West
Director

cc: Dr. Jason A. Lillegraven
Dr. J. Howard Hutchinson
Mr. and Mrs. Glen Wadsworth
Mr. and Mrs. James Gregory



Mr. Kelly Kiersejewski
Manager of Land Management
July, 1985
Rock Springs, WY. 82902-2869

15

Wyoming Wildlife Federation
P.O. Box 106, Cheyenne, WY 82003
307-637-5433
2835 E. Teton Blvd.
Green River, WY. 82433
Feb. 28, 1985

MEMBERS OF THE DRAFT EIS: HICKEY MOUNTAIN - TABLE MOUNTAIN

Dear Mr. Kiersejewski,

Please accept the following comments on behalf of the Wyoming Wildlife Federation, Wyoming's largest citizen group which numbers over 10,000.

The WFF is very concerned over the effects that could result from a "full field" development in the Hickey Mtn. - Table Mtn. area of Southwest Wyoming.

We appreciate the opportunity to provide input into this EIS process.

continued ...

WORKING TODAY FOR WILDLIFE'S TOMORROW!
Wyoming Affiliate of the National Wildlife Federation

Response to Letter 15

15.1. The text has been corrected to reflect application of mitigation measures, which will prevent ground water contamination or exceeding state water quality standards.

15.2. Initial proposals were analyzed in this EIS which are subject to alternative siting within environmental and geologic constraints. On-the-ground analysis would determine the best siting for specific wells, roads, or pipelines.

15.3. The state of Wyoming, Air Quality Division, DEQ, has permitting authority for plant emissions. The Phillips plant, now considered as part of the Proposed Action, would have no net increase in emissions by replacing and modifying Solar Center Compression Units.

15.4. Refer to response 15.2.

15.5. Plans for two of these six wells have been modified by Texaco. The alternative collector road between Forest Road 72 and Texaco No. 13 well is no longer part of the Agency Preferred Alternative.

15.6. Companies have abandoned previous plans to drill the two wells atop Hickey Mountain. Future plans for these leases would be considered and analyzed when presented to BLM.

15.7. The Phillips plant proposal has been added to the Proposed Action and to the Agency Preferred Alternative. The agencies are actively encouraging companies to cooperatively develop facilities.

15.8. Recreation monitoring and Law Enforcement have been added to the wildlife monitoring program.

15

2.

Justification of Concerns

According to recent interagency baseline research, the area is highly valuable to resident and seasonal wildlife herds. It is also evident that this portion of the Upper Colorado River watershed harbors a sensitive species of cutthroat trout, contains established fisheries for several other sport species, and may be valuable in its contribution of clean water to downstream, out-of-state fisheries. The area's visual resources, air quality, habitat diversity and proximity to large contiguous regions of National Forest make it popular for sportmen and other year-round non-consumptive users.

We (WFF) agree with the BLM's basic assessments of the impacts of full field development. Some of these include:

1. fisheries degradation due to sedimentation and the probability of spills (which have already occurred with present levels of development," p. 76) along Sage Creek, Loose Creek and Henry's Fork. (see also p. 44);
2. loss of habitat now in use by big game for winter range, migration, calving and cover;
3. non selection of remaining habitat by big game species because of increased human presence, road density, traffic, (poaching and harassment), and fragmentation of habitats.

"It is unlikely that this area would continue to support current population levels of elk, deer, or moose in either the short or long term, unless the No Action Alternative is selected." (p. 76);

4. loss of nonconsumptive public use of primitive roads. Road closures will be forthcoming in order to meet road density standards prescribed in the Hutton-Crane National Forest (amended and p. 57, 60);
5. high probability of slumping and landslides in the proposed area;
6. reduction of visual qualities this area is known for;
7. contribution to cumulative SW Wyoming emissions of NO_2 (p. 77); and

continued ...

3.

- 15.1 8. probability of ground water contamination (p. 65) and state water quality violations (p. 65).

The Wyoming Wildlife Federation is concerned that Wyoming's current economic climate is creating an attitude of despair among legislators, agencies and others. The manifestations of such an attitude are to be seen in the extremely facilitative agency posture and in retrogressive environmental legislation just passed by Wyoming's legislature. It must be recognized in the development of all long-range policies and specific (R&D) plans that Wyoming's longest-term, especially visible resource is its outdoors. Short-range projects which substantially reduce this resource should be firmly scrutinized, regularly monitored and enforced, and sometimes reduced in scope to protect the wildlife resource and the environment.

Statement of Philosophy and Position

We support and applaud certain mitigative measures proposed by WLM in its draft EIS. These include:

1. seasonal stipulations on road-building and well-drilling activities; We encourage adherence to seasonal wildlife stipulations as listed in Table 6-3, p. 101.
2. limitations on concurrent operations in the field, those extending the economic benefits and reducing impacts; and
3. other specific stipulations that address fisheries impacts, such as bridging and arch-colverts.

However, we are highly concerned about the cumulative impacts of partial or full field development. Our overall impression is that the WLM is advocating full-field development after recognizing the permanent losses the area would experience. WLM's facilitative posture in this draft EIS runs contrary to the evidence presented. We firmly believe that the value of the Hinkley-Pahre Mtn. wildland will hold the operators' interests even if reasonable reductions and further stipulations are imposed.

In particular, we feel that WLM is not recognizing or restricting activities where they involve:

- 15.2 1. slush or slide areas. Under full-field development, at least three prepared wells and one injection well would be placed in areas of

continued ...

4.

- 15.2 severe landslide hazards (maps 2-1 and 3-4):
2. Sage Geyser Lake. 1+ miles of proposed local road and 1-2 wells would be placed in a section where a strutting grouse has been identified (Sec. 15, T 22 N, R 114 W);
 3. NO_x emissions (p. 77) from proposed gas plants. Considering the presence of several NO_x emitters in SW Wyoming already and further consideration of the sensitivity of Wyoming's mountain lakes to sulfate deposition, it is not enough to consider the emissions of this one plant in isolation. It is time for all permitting agencies to calculate cumulative air quality damages, and to permit or restrict accordingly.
 4. riparian areas. We are very troubled over an AQ well right in the middle of irrigated wetland in the Henry's Fork flood plain.
- 15.3 The riparian areas are prime wildlife (particularly for osprey) habitat especially during summer months. Could additional steps (precautions) be taken in the event of a blowout or other accident to protect wetlands? Additional diking may help. In the future we urge the WLM to not allow placement of wells directly in floodplains and riparian areas.
- 15.4

The WWP has identified 3 areas that will be severely impacted :
1) and 2) Hinkley Spring Unit and 3) Taylor Marsh Unit.

Hinkley Spring Unit: 1.9 mi. of new collector road, 17 Tensate wells, and 2 Anadarko wells.
Fawn and calving areas; elk, deer, moose.

- 15.5 Big game will be displaced during parturition period due mostly to vehicular traffic. In addition, this area serves as winter range for elk, moose, and mule deer in moderate and severe winters (Wy. Game Fish Fringe, 2/12/87).
- Some wells; Tex. # 6,8,10,16,17 should be abandoned. Access to the Hinkley Springs Hydrocarbon Processing Site should enter from the south via Cottonwood Mountain and Sage Creek.

Hinkley Spring Unit - Review Summary

Documentation shows that a elk migration from Utah uses this route to enter into winter range and calving areas.

continued ...

5.

There should be no log road to connect the existing Road Road to the north with the developed Table Mtn./ Louisa Creek Road to the South. This log road would impact a big game security area and migration corridor to Hickey Mountains.

Timber Harvesting

Documentation by the W. Game and Fish Department in recent years (Gardner 1963, Paulsen, pers. obs., Sen pers. obs., Paper et al. 1965, 1966, 1966-7) have determined from 70 to 150 elk are known to winter in the Hickey Mountains area. A large percentage of these observations are in the vicinity of where American Quasar and Diamond Hancock propose to drill AQ 23-24 and 25 33-27.

The most important factor for elk to winter in the area is the forage (grass) provided by the frequent West and NW winds on Hickey Mountain. Also, Hickey Mountain serves an important elk calving function as well (Gardner 1965).

The WVF recommends 25 33-27 and AQ 23-24 must not be drilled at the proposed sites. These wells and accompanying roads must be developed on the West slope and off the top of Hickey Mountain. Would directional drilling be appropriate here?

In addition to the importance to roose and deer, Hickey Mountain is a critical elk wintering, migration and calving area. The BLM has the responsibility to not allow development of the entire area of Hickey Mountain (as they currently propose).

Because this area is somewhat isolated and remote and due to the dangers of workers during construction and later on during operations and maintenance of the plants and due to the abundance of big game indigenous to the area at the present time, the WVF makes the following request:

Concern #1. There is a probability of at least limited poisoning, recklessness shooting, and wildlife disturbance.

Request: Drug and firearm prohibition must be enforced by all companies, contractors, sub contractors... This is in effect already in the Shute Creek Area and would show a responsible attitude on the part of energy developers.

Concern #2. Big game displacement, loss of critical winter range and possible long term loss of recreation and sport hunting to local residents.

Request: continued ...

6.

Request: Additional stipulations for reclamation must be enforced to guarantee full restoration of top soil and wildlife forage (native plants and shrubs) following the cessation of energy activity in this critical wildlife area. Is there any possibility that at least some of the many companies interested in this field could share development costs, wells, plants, roadbuilding expenses, and then equitable divide returns from the processing plants? This whole idea is quite complex, but has the BLM considered approaching the various companies to determine any degree of interest in the concept? We must keep in mind that with full-field development that there will be a tremendous impact to wildlife, habitat, and recreation opportunities that have up to now been enjoyed by many people.

Concern #3 Wildlife monitoring

Request: Especially during the construction phase of development the entire area will be inundated by the "human workforce." As explained in concern #1, many opportunities will be present for conflicts (some illegal) with wildlife. WVF recommends that the developing companies share the cost of at least a part-time worker to supervise any unwarranted and unnecessary impacts to wildlife, also poaching. At a very minimum, this position should be funded during years of development and one year following completion of the construction phase. This should help to develop good attitudes and habits by the employees working in the area to not interfere needlessly or illegally with wildlife.

Request #4. Maximum development should not be developed. There is no way to provide any substantial environmental quality standards in a full-field (one well per sq. mile) scenario.

Request #5. Collector roads should be reduced. Allow some public use of traditional primitive roads. A compromise between full public enclosure and heavy public road use is needed.

Request #6. We do support pipeline transport over truck transport and recommend the BLM put these stipulations into effect where possible.

Thanks again for the opportunity to make these recommendations.

John D. Herman Jr.
John D. Herman Jr., Vice President WVF
& WVF BLM Committee



Mountain Fuel
Resources, Inc.

70 SOUTH STATE STREET • P. O. BOX 1689 • SALT LAKE CITY, UTAH 84141 • PHONE (801) 533-8300

A. J. HARRINGTON
Vice President

16

February 27, 1987

Mr. Wally Mierzejewski, Team Leader
Bureau of Land Management
Rock Springs District Office
P. O. Box 1689
Rock Springs, WY 82901-1689

Dear Mr. Mierzejewski:

RE: Comments Regarding Hickey Mountain/Table Mountain
Draft Environmental Impact Statement

Mountain Fuel Resources, Inc. (Resources) and its affiliate company, Quiviter Energy Corporation, are treated with the purchase, gathering, processing, transportation, marketing and sale of natural gas through its pipeline system located within all areas included under the Hickey Mountain/Table Mountain Draft Environmental Impact Statement.

Resources offers transportation services on its pipeline system on a non-discriminatory basis under the terms of Section 311 of the Federal Energy Regulatory Commission Order 436 with adequate rate flexibility to be market responsive. Resources is willing and believes that it can compete favorably with any other alternative means of gathering and transporting gas from this area to existing interconnection points on its system with other pipeline companies.

Resources currently owns and operates several gas gathering pipelines and a 20-inch high pressure gas transportation pipeline serving the Bridger Lake-Lucky Ditch area (see attached system map). Resources has also proposed to expand its facilities to gather gas from other producer facilities in the area. Resources agrees with the Bureau of Land Management and the U. S. Forest Service that duplication of existing pipeline facilities in the area by others would be contrary to the philosophy of utilizing common pipeline corridors and facilities to minimize surface damage and prevent additional environmental impact.

In addition, Resources suggests that consideration be given to whether seasonal restrictive periods to allow construction activities to take place if on-site evaluation of

16

Mr. Mierzejewski

Page 2

wildlife allows. Often, wildlife restrictive periods unnecessarily limit construction periods or require that development be either accelerated or delayed which increases facility costs.

Mountain Fuel Resources generally supports the conclusions of the draft EIS and intends to continue working with governmental agencies and area producers to accomplish the most economically and environmentally acceptable solutions to gas gathering, processing and transportation in the vicinity.

Yours very truly,

A. J. Harrington

GWH/ey
Attachment

Response to Letter 16

16. Thank you for your comments, your concerns will be considered in the decision making process.

Response to Letter 17

17



INTER-OFFICE CORRESPONDENCE / SUBJ: P. O. Box 2020
Cheyenne, WY 82002

March 2, 1987

Wally Mierzejewski
Bureau of Land Management
Rock Springs District Office
P. O. Box 1849
Rock Springs, Wyoming 82902-1849

RE: Hickey Mountain Table Mountain
Oil and Gas Field Development
Draft EIS

Dear Mr. Mierzejewski:

Thank you for the opportunity to comment on this draft EIS. Phillips Petroleum will comment for the next part on Appendix C, but will include a number of other observations. Where possible page or section numbers will be referenced for clarification.

Phillips, through a minor acreage holder in the study area, is the operator of the closest and largest existing field and gas processing facility in the general area. Our interest in further development of the area is well known but we were not contacted for our input to the draft EIS, we find this somewhat curious and inappropriate. But we are approached the Power Service and BLM with a proposal that affected the study area we would still not be included.

Page 5
The State of Wyoming Air Quality Division also monitors emissions resulting from the flaring of wells associated with drilling workovers and completions.

Wyoming Oil and Gas Conservation Commission issues approvals for Class II water disposal wells.

Page 11

(a) Reserve pit muds can be solidified using pit spoil following dewatering, solidification with cement is costly and unnecessary assuming the objective is to eliminate possible migration of fluids and subsidence of the area following reclamation.

(b) The wells in the area produce large quantities of oil in addition to gas, the paragraph at the top of the second column gives the impression these are primarily gas producers.

17.1. Omission of Phillips Petroleum Company from our mailing list was an error. However, copies of the DEIS were provided to your company representatives at the Bridger Field Plant in mid-January 1987. Phillips Petroleum Company, in Denver, responded during Formal Scoping for the project in November 1985.

17.2. The AO will require measures to meet specific reclamation objectives. Alternative measures that would ensure proper reclamation of mud pits would be considered.

17.3. Text has been revised.

17.4. Text has been revised.

17.5. Appendix 5, now Appendix B has been reorganized and measures clarified as appropriate.

17

Page 2
March 2, 1987

Page 15

In the discussion of water disposal DND is mentioned as the permitting agency, WYDCC is the regulatory agency for Class II UIC wells in Wyoming for the disposal of water produced in association with oil and gas.

Appendix C

In general this appendix is repetitive and in many instances contradictory.

(b)(11) Maintaining a narrow gate unless associated with a security station is an unnecessary expense, would not a cost/guard achieve the same results.

(12) If a reserve pit is lived to the AD's satisfaction dye testing should not be necessary. If ground water is high enough to be easily dye tested perhaps a zero discharge mud system would be an appropriate stipulation.

(13) Allowing only one year from APO approval to reclamation may not be sufficient time, in very cases a well may still be in the drilling or completion mode by the end of that time. This section should be eliminated.

(14) Requiring tank battery dikes to contain the full volume of the facility is contradictory to the requirements of the Clean Water Act (CWA) requirements and assesses failure of the entire facility.

(b)(4) Having the operators name and a station number on every stake set 100-300 yds apart is excessive, this is appropriate to have.

(6) Engineered drawings for all facilities is excessive, simple tank batteries and gas separation facilities can be installed properly with minimum plans.

(b)(12) These two could be combined with no bulle being submitted within 60 days of completion followed by the completion certification. Much duplication throughout this (12) section could be eliminated by stating that facilities will be constructed and tested in accordance with "... " as written in (9).

12) A one year prior notice for immediate application is too long, often an operator doesn't know what will need to be sprayed until overpressure has started. This requirement could result in field wide applications being submitted annually.

Page 1
March 2, 1987

- (16) Begin this section with the fourth sentence.
- (20) What authority does the RCM or FS have to regulate signing off federal lands?
- (22) The sentence regarding used engine oil can be deleted. The following sentence covers the matter sufficiently.
- (27) (1) Who will provide this training, to what extent is it to be done, will business be provided? The Wyoming Game and Fish should provide this service.
- (3) Compensation for disturbing critical habitat, this is a very touchy subject. It is known that complete reclamation in less than five years rarely happens. If another piece of land is already in poor condition and will be enhanced why is it believed the enhancement will be ready for wildlife use sooner than the area being compensated for.
- (12) Unless there is reason to believe pollution has taken place it is unreasonable to require companies to occasionally monitor water quality, siltation and fisheries. A base line study should have been done in conjunction with this EIS.
- (14) This EIS should have identified any rare species and their habitats within the study area. Information needed to mitigate impacts should also be available.
- (13) Wetlands are the subject of one of the existing statewide special stipulations, this one is unnecessary.
- (17/18) Both are repetitions of previous stipulations.
- (21) Why does brush have to be cleared by hand? It is understood it cannot go into topsoil stock piles but hand clearing is unnecessary.
- (23/23) Again, water disposal well construction, operation and maintenance are regulated and permitted by the MWD. Not MWD. As written these two sections are contradictory. The last sentence of 23 and the last two of 24 are unnecessary.
- (25) This temporary bridge language is confusing, possibly contradicting within itself as well as 9 and 10.

Page 4
March 2, 1987

- (6/27) These sections are repetitive.
- (22) Most of this section has been previously discussed. The landscape architect concept is far fetched, these are safety distances to be maintained. Seaweeding can be done without the cost of a landscape architect. The company or agency reclamation specialist can supply assistance here.
- (23) This is repetitive.
- (24) As written this requires construction monitoring of all projects not just those where surface valves have been found.
- (26) A paleontologist should not be required for all projects, projects can be screened by the RCM for their potential to contain these values.
- (40) This stipulation will eliminate all oil trucking, all motorway rigs, all emergency vehicles etc. if the roads are built to required standards this stipulation is unnecessary.
- (47) All of the information discussed here is required by the RCM plan of development.
- (40/43/48) These can all be combined.
- (48) This contradicts other stipulations.
- (51) A year is often not available for planning prior to abandonment of a site, flexibility is needed.
- (3) Reclamation and Guidelines: For consistency all discussion of reclamation should be contained here and not scattered throughout section (3).
- (3) (3) The use of grain straw is inappropriate if native species of grass are to be stipulated.

Again we appreciate the opportunity to comment on this draft EIS. Unfortunately Full Field Development will never transpire much less the reduced proposals. This EIS has been done unnecessarily.

Sincerely,

WILLIS FENDLER GERNY

W. F. Gerny
D. C. Gill
Area Manager

RGM/TB
cc: Dan Cooper
C. Mallendore - Denver



Diamond Shamrock
Exploration Company

March 1, 1987

Bureau of Land Management
Rock Springs District Office
P.O. Box 1659
Rock Springs, Wyoming 82801-1659
Attn: Sally Marnagjewski

Re: Hickey Mountain - Table Mountain
Draft EIS

Dear Sally:

Diamond Shamrock Exploration Company as operator of the Taylor Ranch Unit offers the following comments on the subject draft EIS.

In the Summary Section of the EIS it is noted that companies were requested to provide Plans of Development on maximum potential development. It is also stated that recent geologic information indicates that development to the extent described in the proposed action may not be fully advised and this is an understatement. The geologic information, coupled with the stage of the oil and gas industry, clearly shows that development as described in the proposed action will not take place in the foreseeable future or possibly at all.

I ask the question, then why continue the study? This question has been answered with if and when development takes place a study will be in existence; this may or may not be true. As we have seen in the past, studies become obsolete and outdated. Thus at development time a new study may be required. That would make the time, effort and expense of this EIS for naught.

18.1

Referring now to Appendix C, we find certain stipulations unnecessarily burdensome, controversial, and with need for clarification. Many of these stipulations were composed to mitigate impacts under maximum development. Since this is the most unlikely case, a number of them should be reviewed and dropped.

The Taylor Ranch Unit is the area within the EIS which has the most private surface acres, underlain by both Federal and Free Minerals. Some of these stipulations may contradict certain desires of these private surface owners.

Diamond Shamrock Exploration Company is a subsidiary of Diamond Shamrock
P.O. Box 25027, Tulsa, Wyoming 82084

18

Response to Letter 18

18.1. Appendix B, now Appendix B has been reorganized and clarified as appropriate. Thank you for your comments.

18

The following are the stipulations in question:

Appendix C

#1 Funding of Entire Well Pad Locations: If this is to be the norm, it should be clarified that enough area be reserved to allow all surface rehabilitation to be accomplished without constantly moving fences.

#2 Lining of Reserve Pits: This should be at the discretion of the AD (Authorized Officer), and not a blanket stipulation, as impermeable ground may be encountered making lining unnecessary.

Appendix C - 7b

#14 Preconstruction Conference: At this stage, just before construction there has undoubtedly been numerous on the ground inspections with all parties involved. These conferences should be reserved for the more difficult construction cases. The ten working days prior notice to scheduling of the conference is excessive; three days notice is 15 time.

#15 Erosion Service Begin for Roadway Guidelines: This should not be standard. Road projects may arise where implementing these guidelines would cause the road to be "over engineered" adding additional time and cost, and may not apply in a private surface case.

#16 Proof of Consent of Access Across Private, Patented, State or Fee Land Prior to Commencement of Federal Approval: This is the operators responsibility and should have no bearing on Federal approval.

Appendix C - 7c

#1 Successful Rehabilitation of Temporarily Disturbed Area Within Five Years: This stipulation needs to be expanded upon and clarified as to what point in time it would be implemented.

#7 Location of Well Pads and Facilities from Stream Banks and/or Well Head Unacceptable Characteristics: The distance of 500' to 650' is excessive, noting the topography and geologic reentrance.

#10 Requirement of Fisheries and Surface Water Monitoring Program: This stipulation should be applied only under maximum development.

#12 Company Conducted Surveys for Endangered Species at Least One Year in Advance of Surface Disturbance: This is a time frame that is almost impossible to adhere to. Many factors beyond the control of both Government and industry would dictate surface disturbance with less than one year prior notice.

#23.624 Injection Wells: There is contradiction between these two stipulations. The Wyoming Oil and Gas Conservation Commission has jurisdiction over all oil and gas injection wells, and not the Department of Environmental Quality.

#25 Cultural Resource Inventory Requirements: This requirement may conflict with the desires of private surface owners.

#26 Suspension of Operations Upon Discovery of Cultural Resources: A halt in time frames for resumption of operations should be imposed, along with necessary participation by the Surface Management Agency.

#27 Monitor Surveys During Construction by an Approved Archaeologist: Excavation needs clarification; is an archaeologist required to monitor all dirt work?

#28 Paleontologist Requirement: A paleontologist should only be required when the Bridger Formation is disturbed. As pointed out in the EIS this is the only fossil bearing formation in the study area.

#29 Spring and Fall Road Restrictions: Due to High Riders' Concern: To limit large truck activity to periods of frozen ground is too restrictive, as pointed out in #46, companies are responsible for preventive and corrective road maintenance.

#46 Restricting of Access to the Public: Operators should have the right to restrict public access for safety reasons (to the drilling of a confidential well) with the AD approval.

Appendix C-3 Reclamation Guidelines

This part of Appendix C needs to be reviewed and scaled back. Existing permit requirements such as Operating Order #1 approval, and Site Specific Lease Stipulations, adequately protect and outline reclamation. Additional construction and use plans, employment of Reclamation Specialists and Interdisciplinary teams is unnecessary. This is further supported by the most likely case of reduced development.

Thank you for this opportunity to comment, and I look forward to working with you in the future.

Sincerely,

James M. Fathelaki
James M. Fathelaki
Sr. Environmental & Regulation Engineer

20746



Utah Wilderness Association

435 East 400 South • 8405 Salt Lake City, UT 84111 (801) 259-1327

Mr. Wally Maraszewski
BLM
Rock Springs, Wyoming

February 26, 1987

Dear Mr. Maraszewski:

We are providing these comments on the Hickey Mountain-Table Mountain Oil and Gas Field Development EIS. We have several questions about the proposal as well as comments. However, it must be noted that this project will have substantial impacts on the Uinta Mountains, one of the most pristine large mountain ranges in the United States because of the importance of this range for wildlife, watershed (one of the water originating in Utah comes from this range) and recreation. Any oil/gas development must keep these other resources in mind. To simply defer to mineral development as the dominant resource under a majority of public involvement and multiple use mandates and violate the direction of the Wasatch-Cache National Forest Land and Resource Management Plan.

This is not to say there are no attempts at resolving conflict in the agency preferred alternative. There are. One example is the avoidance in the agency preferred alternative to cross Sage Creek and Henry Fork with roads. However, this is the exception rather than the norm.

Wildlife

The EIS is filled with references to the impacts on wildlife from oil and gas development. Roads associated with that development render thousands of acres unsuitable for species such as sheep. Impacts to riparian areas can destroy critical moose winter ranges and fisheries. The Utah Division of Wildlife Resources' North Slope Elk Herd Management Plan sums it up best by noting oil and gas development "is in no way beneficial to this unit. The same is true for many other species."

Failure to Meet Forest Plan Direction

The draft EIS fails to meet the direction in the Forest Plan regarding wildlife and minerals relationships. The Forest Plan notes the Wasatch-Cache "results as the most important wildlife and minerals Forest in the State of Utah. The plan further indicates minerals were not identified as one of the 24 issues (pages 111-1 through 111-4) yet wildlife concern encompasses two issues. However, the emphasis in the draft EIS on protecting oil and gas while mitigating "other resources"

Response to Letter 19

19.1. We appreciate your concern for the wildlife in the Hickey Mountain - Table Mountain area. The importance of wildlife led us to include substantial mitigation measures relative to timing of development and distance from important habitat. We also need to point out that the roads associated with development do not themselves render areas unavailable for wildlife. The human use of these roads particularly, continued and persistent travel associated with oil and gas activities, followed by hunting and recreation uses are what cause avoidance.

19.2. The Wasatch-Cache Forest Plan does not rank resources nor assign priorities. In the study area, mineral resources are important and wildlife resources are important. The terms of the final EIS will impact both resources. We hope we have selected a course of action which will provide the opportunity to remove the oil and gas resource with minimum impact on wildlife. We hope we have selected a course of action which will provide the opportunity for wildlife resources to continue to use the area with minimum impact on oil and gas resource removal.

The goals for wildlife management in the Forest Plan (pages IV-7 and 9) are clear: it is a priority. Big game habitat (measured in acres, page IV-4) is to be maintained or increased as is wildlife productivity. Habitat loss is to be managed (page IV-14) to "protect and conserve other resources" and development must be integrated with the "use and protection of other resource values".

- 10.2 However, the draft EIS for Hickey Mountain changes the emphasis in the Forest Plan 100 acres. All alternatives, except the no-action (which is virtually eliminated on pages 12 and 21), propose full field development which would require the loss of 1,000 acres (page 27). Even the agency preferred "mitigated" alternative would have "important" developments in big game use of the area, particularly for elk (page 60). Up to 200 acres of wildlife habitat could be negatively affected under the proposed action (page 50). Wildlife habitat loss is "mitigated" to meet the minimal development which appears to be the most dominant and important use in the EIS. There will not be gas development or "mitigation" (a system for reduced) to meet the concerns of elk, black bear, recreational or cultural uses. Habitat loss is given priority as required in the Forest Plan, this project is in direct violation of an approved land management plan.

Roads

One of the major problems in the EIS is the discussion of roads and how they relate to wildlife. It is particularly difficult to determine exactly how many roads will be constructed and how frequently they will be used. In this respect, the draft EIS and supporting data are inconsistent and contradictory.

For example, the EIS shows (page 31) the road density (2.8 miles v. 1.4 miles maximum) is primarily extended on the national forest capacity in the standards and guidelines found on pages IV-43 and IV-45) on the Forest Plan. How can this be justified, particularly as it is so important for wintering wildlife? If the current density exceeds the standards in the Forest Plan then the entire federal agency planning process is suspect and "promised" mitigation is rendered meaningless.

- 10.3 One would assume, given the projected figures of road construction, the additional roads from development of the agency preferred alternative (page 30) would exceed the Forest Plan maximum minimum on the Forest National Forest even if primitive roads and new local roads are closed. The so-called new local roads apparently to be used by agency personnel and all gas personnel which are signed for public closure are not really to be closed. The footnote referencing this closure (page 30) states: "Authorized users and agency personnel would be the only users of these roads." That is not stated in the Forest Plan 1000 standards. Closing roads only to the public does not close roads. The EIS is belated by Forest Service and all company vehicles as much as by public vehicles.

Another problem with the wildlife/road density issue is the omission in the EIS of the detailed discussion found in the Transportation Technical Report. This report shows the existing roads meet the allowable standards (2.3 per square mile) and the increased usage by oil and gas extraction (the existing roads, not the new roads) would increase the road mileage would be the equivalent to 3.7 miles of road per square mile of land (NOTE: Table 1). In this report there were more existing roads than is reported elsewhere. This conclusion in data is cause for alarm. Even this figure is contradicted in a later table in the same report which shows many more miles of road.

Such road density, if accurate, are indeed high. If this is the case, the statement on page 70 that "new vehicle access roads would be particularly beneficial to hunters where access was previously limited" certainly is a lie.

10.4 Is it true the EIS recognizes the need to close roads because new roads are built (page 60). Yet nowhere in the EIS is there a map showing roads to be closed under the "national standards". There is only a map showing roads to be closed under the "local standards". The EIS tends to be more explicit in detailing where these closures are proposed under the various alternatives.

- 10.5 The EIS does not clearly state errors and inaccuracies regarding road densities and distances. However, the real concern is that this project meets the Forest Plan's standards regarding road densities and before (footnote) to do so clearly provides all development alternatives analyzed in the EIS.

Lack of Analysis for Certain Species

The EIS fails to analyze the impacts of the development on species such as black bear, pine marten and other carnivorous mammals. The bear is listed in the technical reports as occurring in this area. If we need to protect the animal listed "What about the cat?" There is no mention of this species anywhere in the EIS. It is difficult to believe it does not inhabit or use the EIS study area. Why was it not analyzed.

- 10.6 The technical reports state that wolfpacks do live within the area. It seems this species was omitted from analysis because of several habitats it found within the study area. Does this mean there will be absolutely no impact on wolfpacks from this proposal?

Insufficiency of the Wildlife Analysis

Nowhere in the EIS is there an attempt to assess the loss of wildlife numbers under the various alternatives. The quantification is given as to the decrease in number of various species expected under any alternative. The EIS fails to give where dispersed wildlife will go. For example, as a result of development, some of the EIS Forest Plan 1000 impacts to over 37,000 acres of habitat, nearly all the big game species analyzed would be expected to disappear -- a loss of some 600 elk, several moose and a sizable deer herd.

Fisheries

The EIS proposes more considerable measures to help protect the fisheries in the area including a prohibition on road removals over Sage Creek and Hickey Creek. However, none of the major concerns with the fisheries in the area is the amount of sedimentation (page 11). In chapter IV, impacts likely to result from the fisheries because occurs would primarily be limited within 500 to 600 feet of live water. However, the EIS estimates that sedimentation would be limited from stream channel construction activities and more removal. This contradictory information needs to be further addressed.

Threatened and Endangered Species

- 10.7 The technical reports state that both bull eagles and whooping cranes use the area (see pages 4, 7 and 9 in HFT Tech. Rep. Wildlife/12-15-00/0745). However, the EIS does not indicate if the federal consultation has occurred with the U.S. Fish and Wildlife Service on these endangered species as required by the Endangered Species Act.

19.3. The analysis for oil and gas development in the study area included a more intensive inventory of roads than occurred in the broad level inventory of the Forest Plan. As a result, we found many wheel track roads not previously inventoried. This is an advantage of the additional analysis required prior to project initiation. The figures shown on page 31 and 69 of the Draft EIS are correct. Figures on pages 30 and 31 are study area totals except where identified as National Forest figures. The table on page 69 contains only National Forest totals. Table T-1 in the technical report does not segregate the roads by ownership. We did this segregation in the Draft EIS for clarity. The Forest Service plans to close roads on National Forest lands to meet Forest Plan direction of 1.4 miles per square mile maximum. Local roads being used for exploration traffic will be counted toward this maximum even if gated. Once this exploration traffic subsides on gated roads, after either abandonment or during production, the road will move to the closed category.

We agree with the need to monitor road closures. The Forest Service plans to maintain a large scale map showing roads which are open and closed. They will keep this map current so that new proposals can be analyzed and open roads kept within Forest Plan standards.

19.4. We feel that proper management of the project to minimize impacts on big game species and threatened and endangered species will adequately provide for other wildlife species in the study area.

19.5. Analysis of the study area shows that mitigation measures such as seasonal restrictions and road closures will minimize the impact on wildlife populations. Hunting pressure will be somewhat reduced by the needed road closures. The precise change in wildlife numbers caused by the combination of factors is unknown but is not expected to be significant.

19.6. We do expect erosion in the study area to increase due to exposed soil during well pad and road construction. We do not, however, expect the increased erosion to affect fisheries because of the set-back from live water designed to minimize the chance of sedimentation of live water. We have added Little Sage Creek to the list of streams prohibited for road crossings.

19.7. The transitory nature of the threatened and endangered species using the study area requires an informal consultation with the U.S. Fish and Wildlife Service. This has been accomplished. See Letter No. 7. They have concurred with our analysis of the impacts and made suggestions for improvement of protection measures.

Adjacent Resource Uses

Impacts to resources and uses adjacent to the study area are poorly documented. For example, the EIS erroneously discusses wilderness (see page 37) as an issue because it "would not be affected by the proposal." However, much of the wildlife that use Hickey Mountain area is the winter, summer in the Uintas in the south (page 37) including the wilderness area.

- 16.8 Congress recognized the wildlife values in the area when designating the High Uintas Wilderness. The House Committee stated that, "From a wildlife perspective recreation and watershed standpoint, the High Uintas are Utah's most significant wild area, and indeed, are one of the most diverse and interesting wilderness ecosystems in the entire state."

Therefore impacts to wildlife populations in Hickey Mountain do affect the wilderness area the same as they affect hunting and other wildlife recreation both within and outside the wilderness.

The EIS should also analyze the impact to wildlife and associated recreation uses outside the Hickey Mountain EIS area. There is no analysis of impacts to hunters or other recreational users from wildlife lost around Hickey Mountain. The EIS specifically points out that impacts would be "disputed (see p. 21)." "Thereby reducing the value for hunters." There is no indication these animals may be lost because other areas are already inhabited. Neither is there an analysis of losses to wildlife associated recreation outside the area which could be caused by losses to animals who winter inside the study area. (See discussion on cumulative impacts for more information.)

Visual Resources

The visual resources are certain to suffer from the proposed action. In fact, it is clear in the EIS (page 40) that:

resources caused by oil and gas exploration or other activities would be "impacts on visual production would be considered significant where a proposed development would not meet existing BLM Visual Management (VRM) class objectives or V5 Visual Quality Objectives (VQO) in the study area."

- 16.9 The EIS further explains that visual objectives would not be met when oil rigs were drilling and the processing plants likely would not meet visual objectives (pages 36 and 37). However, the Forest Plan on page 15-66 (to develop forest management plans) says, "Require that mineral activities comply with visual quality objectives." The EIS states the development will not comply with the visual quality. Therefore these activities must be modified before this project can be initiated.

Soils/Watershed

The soils in the area are extremely sensitive to disturbance and many of them are very unstable. The map on page 10 shows how well located in severe landslide hazard and four wells located on north with above a high landslide hazard. Why was this allowed to occur?

- 16.10 The Bishop Comptroller is in a position that could be easily contaminated. The regulations require that mud pits and well shafts be covered to prevent contamination. If this activity will drilling activities be stopped if monitoring shows the aquifer has been contaminated?

Scope of the Project

How was it determined that up to 51 wells could be needed? Can the reservoir be drained with fewer wells? Can it be drained with fewer than the 19 wells now anticipated? If so, there should not be a need for as many wells with removal of the favorable areas are utilized - which removes competition for the subsurface resource on adjoining lands.

- 16.11 How were processing plant locations chosen? Locating two processing plants on national forest land would cause considerable impacts to visual resources and wildlife. Are other existing plants located nearby that could be used for gas processing? Are other locations possible? (see Alternatives section for further discussion on this topic)

Alternatives

The alternatives presented in the draft EIS are not a broad range as required by 40 CFR 205.1(c). The alternatives in the EIS are essentially components of each other. Both the proposed action and agency preferred alternative would drill up to 51 new production wells and the other alternatives are merely component alternatives to the proposed action. All are full field development alternatives in the near term.

- 16.12 The EIS hastily rejected a regulated impact of development alternative (page 23) because it was felt, "potential adverse impacts to resources can be mitigated through the use of seasonal restrictions." However, when with seasonal restrictions, the size of road would be in place at one time (see discussion in this comment) reducing habitat effectiveness because the area is used by big game all year (page 27). By only restricting seasonal restrictions, the EIS neglects an important alternative and thereby fails to consider other viable options.

The EIS should be revised and returned in draft form with a "real" array of alternatives. Alternatives which build no new roads or other developments as oil drilling areas, prohibit any activity in areas crucial water range (land activity on above one and 30% and limit the number of wells and miles of road to something well below the maximum should be analyzed. Included in this is the addition in the EIS that full field development of the original proposed action is unlikely (EIS page 3) and the companies now state only 19 wells are likely to be drilled. Then being the case, the agency should not adopt an alternative of over 19 wells and alternatives for fewer than 19 wells should be analyzed.

19.8. We do not believe human use of the High Uintas Wilderness will be affected by the proposed oil and gas activity. We believe we have adequately pointed out that the proposed oil and gas activity will impact wildlife which use a larger area. (See pages 37 and 57 in the Draft EIS as well as the wildlife technical report.)

19.9. Our analysis shows that oil well drill rigs may not meet visual quality objectives depending on the location and screening available on individual well sites. This compromise in visual quality objectives, if it occurs, will be temporary until drilling is completed and the drill rig removed. The visual analysis also shows that processing plants should be located in VRM Class IV or Modification where mitigation measures can provide for meeting visual objectives.

19.10. The location of wells was provided by the oil and gas companies. In some cases, they supplied this information on a conceptual basis. The soil inventory was done after the company information was received. Our intent is to avoid placing oil and gas development on severe landslide hazard. The information is now available to accomplish this. Actual well pad and other oil and gas facility location will be determined on the ground by the proposing company working with BLM and the Forest Service.

Water quality in the study area will be monitored. If unacceptable contamination occurs, appropriate correction measures will be required.

19.11. The number of wells was obtained by totaling the proposals of the oil and gas companies operating or proposing to operate in the study area. We believe this is the maximum number of wells that might be required to extract the oil and gas. We believe that the critical question is not the exact number of wells that will be developed but the critical resources and areas which need protection of some kind. The market for the oil and gas product could change with time and make low production wells economic in the future. The exact boundaries of producing formations may vary with better information. Whatever these adjustments may bring in number of operating wells and support facilities, the important factor will be for them to operate in a manner which best protects other resources. We feel the best approach to numbers of facilities is to analyze the maximum we can foresee. If fewer wells or other facilities are built, impacts will be reduced.

The proposed location of processing plants was supplied by the oil and gas companies. In the final EIS, we are proposing that all gas processing take place at the existing Phillips plant located in the adjacent Bridger oil and gas field to the south.

Cumulative Impacts

One of the major findings of the EIS in the lack of analysis on cumulative impacts. What are the impacts to wildlife, watersheds and recreation resulting from this project and subsequent activities such as timber harvesting, other mineral development? This question becomes even more important as state builds its standards and guidelines in the Forest Plan and the Forest Service's own administration in Wildlife Management Plan and Regulations (USDA Forest Service Technical Report 110, July 1982, page 41).

The effects of all other Forest activities and resource use in relation to proposed mineral activities are an important part of the wildlife analysis (emphasis added).

Page IV-43 of the Forest Plan EIS states the assumptions and parameters under which the plan was formulated regarding oil and gas development. It notes: "To ease operations (to) live new oil and gas drilling operations per year. Each drilling operation will require an average of about 1 mile of new road construction. Each oil and gas field will require a production facility and about ten miles of pipeline construction."

10.13

However, the agency preferred alternative, proposed action and Geopoint alternatives would have up to 31 production wells, 374 miles of pipeline, nearly 60 miles of road and 19 miles of pipeline (pages 24 - 26). Since the impacts analyzed in the Forest EIS and Forest Plan consider at the most 5 wells, ten miles of pipeline and 3 miles of road per year, there can be no assurance the goals of the Forest Plan can be met. Even the agency itself will concede could create yearly impacts in excess of those analyzed in the Forest Plan.

The Forest Plan's nature analysis, guidelines, standards and management direction are based upon the assumptions noted above. Exceeding them requires an amendment or revision of the plan and protection of certain planned activities that have sensitive impacts upon soils, watersheds, visual resources, recreation and wildlife.

Related to this concern is the lack of analysis in the EIS of critical standards found in the Forest Plan. The EIS does not indicate how the EIS standards (Plan, pages IV-40 and IV-44) will be met nor how much impact the activity will have on these standards. The EIS does not indicate how for the 30 or 300 inches (Plan, page IV-45) would be degraded or if the stream would fall below the maximum prescribed in the plan.

Questions in the Analysis

Several recommendations plague the analysis in the EIS. More short and long term disturbance from proposed plans is expected under the agency preferred alternative than the proposed action (page 25). More acres are impacted for pipelines (page 26) under the agency preferred alternative, and more road and long term disturbance occur under this alternative.

10.14

However, the EIS clearly states the agency preferred alternative provides "greater protection to other resources" (page 22). Why is there this seeming inconsistency?

The EIS does not give a clear understanding of the length of time drilling activities will take place. How long can we expect intensive development? If 31 wells are drilled if 10 wells are drilled?

Summary/Recommendations

The EIS has not clearly analyzed the impacts of oil and gas development (many inconsistencies are found) nor has it analyzed an adequate range of alternatives. We would suggest the following:

- 1- Reissue the draft EIS with a broad array of alternatives. Include a 90 day public comment period.
- 2- Adopt an alternative(s) (at minimum analysis) which:
 - a- Prohibits any roads or activity within six existing roads;
 - b- Allows no activity on all water maps from November 1 to May 1;
 - c- Allows no activity or roads in more critical water maps;
 - d- Prohibits all drilling in riparian areas;
 - e- Allows for drilling of very few wells. The EIS has not shown that the resource can be recovered by only a few wells.
- 3- Set monitoring standards for wildlife populations. If wildlife and/or their habitat fall below current numbers and indices, oil and gas activities must cease.
- 4- No drilling or road building on high or severe landslide soils. Restrict activities to slopes less than 30%.
- 5- Include all appropriate consultation with US Fish and Wildlife Service in the draft EIS relating to endangered species.
- 6- Analyze impacts to other wildlife (for example black bears and bobcats) species found in the area.
- 7- Analyze the cumulative impacts from other planned BLM and Forest activities.

10.15

Please keep us updated on all activities related to this EIS. Thanks very much.

Sincerely,

Gary Macfarlane
Conservation Director

cc: Mr. Dale Burrows

19.12. We believe the array of alternatives is adequate for the circumstances of this proposal for development of existing oil and gas leases. We have added the alternative of processing gas at the existing Phillip's plant south of the study area.

19.13. The oil and gas development proposed for the Table Mountain area does exceed the number and timing of oil and gas development considered in the Wasatch-Cache Forest Plan. That is one of the reasons this additional analysis was done. Our additional analysis determined that the proposed oil and gas activities will meet the terms of the Forest Plan. The Forest Service, therefore, does not plan to amend their plan.

Because of the limited acres of clearing for mineral development, the Equivalent Clearcut Area (ECA) standards of the Forest Plan will not be exceeded. Requirements of the preferred alternative are designed not to degrade the condition of streams in the area. Prohibition on crossing of some streams and mitigation measures designed to protect stream channel condition and macroinvertebrate populations. We will monitor macroinvertebrate populations annually on Henry's Fork, lower Louse Creek, Sage Creek, and Cottonwood Creek to determine if unacceptable impacts are occurring.

19.14. A few more acres are impacted by a processing plant in the draft EIS. This was due to moving them to sites which would have less impact on other resources. We were willing to make this adjustment in acres to better protect other resources. The final EIS proposes that gas processing take place at the existing Phillip's plant. This action would reduce the acres impacted by processing plants. More acres are impacted for pipelines in the preferred alternative, because this method of transportation is preferred over trucking as proposed by the oil and gas companies. Moving processing plants to sites with fewer resource concerns and transporting oil and gas by pipeline rather than trucking provides greater protection to other resources.

Table 2-1 on pages 9 and 10 of the Draft EIS show that most development would occur from 1987 to 1990.

19.15. We have reviewed your recommendation to reissue a draft EIS. We plan to issue a final EIS incorporating the many corrections and information you and others have provided in the review process. Thank you for your comments.



March 1, 1987

Mr. Wally Mierzejewski
Bureau Of Land Management
P.O. Box 1869
Boch Springs, Wyoming 82502 1869

Dear Mr. Mierzejewski:

RE: WINSTON MOUNTAIN-TABLE MOUNTAIN DRAFT EIS COMMENTS

Our coalition, consisting of approximately 28 associations, federations, alliances and organizations, has reviewed the Draft EIS for the Kinsey Mountain-Table Mountain Oil and Gas Field development project. Our coalition represents thousands of sportsmen and recreationalists throughout Utah. The majority are not always against the development of oil and gas reserves since we realize that proper use of our natural resources are essential to the economic and physical well being of our state and nation.

However, we do encourage controlled development with proper mitigation to protect the wildlife resources we presently have and hope to have in the future. It is unacceptable that development of the Kinsey Mountain-Table Mountain Oil and Gas Field can be accomplished through proper controls and timing to minimize adverse impacts to our wildlife.

The following is a list of concerns we have and would like you to consider before approval of the EIS:

WILK GOOSE CALVING AREAS

We are particularly concerned with the impacts that could affect the moose and elk herds during their calving season. The Utah and Wyoming Divisions of Wildlife Resources and the Utah and Wyoming Departments have increased substantial time and money developing the moose and elk herds that calve and winter on the project area. To loose any of these animals at a time that demand for opportunities revolving around these animals are increasing, would be disastrous.

- 20.1 An overview of maps 3-1 and 3-2 show extensive development of wells, roads, pipelines and power lines in the elk calving areas. Development of the field should not take place during the elk calving season to reduce the stress to animals which will result in a decrease in population.

FISHERIES

- 20.2 We are concerned of possibilities of aquatic destruction through a leak. This would devastate fisheries. We ask all precautions available to be taken to prevent such a catastrophe.

Mr. Wally Mierzejewski
March 1, 1987
Page 2

FLARING OF GASES

- 20.2 Development of oil wells sometimes involves flaring or burning of gases that illuminate large areas and can sometimes cause dust raining down that could stress wildlife within the area. This could be devastating during the calving season.

ROADS

- 20.3 Roads developed for well access will allow easy access to areas by hunters. This could result in overhunting of the area and a decrease to the big game population. Access should be restricted to the well sites. A restriction of no hunting by employees working in the area should also be enforced. This procedure would also provide safer operations around wells.

PROCESSING PLANTS

Processing plants should not be sited near or within the elk calving areas. The further these facilities are away from these areas, the less stress to the animals.

SUMMARY

- 20.4 The Draft EIS clearly states that development of the oil and gas field will result in a loss of big game habitat. Reduction of habitat will result in a direct reduction of big game animals pursued by the sportsmen. The developing companies should compensate the sportsmen by obtaining hunting rights on lands of equal size and habitat as part of the mitigation that should accompany any development.

- 20.5 Finally, we would like to see some duplication of effort by the eight companies involved reduced to a minimum, with eight private oil companies competing to get the oil out. There will be attempts to get the most oil as quick as possible, with total disregard for the most practical methods of doing this.

Thank you,

David M. Turley

David M. Turley, Member
Public Lands Committee
Utah Wildlife Leadership Coalition
75 East Monticello Dr.
Kaysville, Utah 84037

US District Ranger/United States Forest Service/Wendish Cache National Forest/
Mountain View Ranger District/Mountain View, Wyoming

Response to Letter 20

20.1. Seasonal restrictions to construction activities within the field would be applied to protect big game and other species during crucial periods.

20.2. Measures in Appendix B address these concerns.

20.3. Local access roads to wells would be closed to all but necessary company and agency traffic.

20.4. Offsite mitigation, to replace habitat lost to wildlife populations would be considered. This measure is described in Appendix B.

20.5 The Agency Preferred Alternative has been modified to include the use of the existing Phillips Petroleum Company Processing Plant by several of the proponent companies.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII

ONE 18th STREET, SUITE 800
DENVER, COLORADO 80202-4045

DATE - 2 1987

Ref: 87W-198

Wally Mierzejewski, Team Leader
Bureau of Land Management
Rock Springs District Office
P.O. Box 1889
Rock Springs, Wyoming 82902-1889

Dear Mr. Mierzejewski:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the Region VII office of the Environmental Protection Agency (EPA) has completed its review of the Slough Mountain-Talbot Mountain Oil and Gas Field Development Draft Environmental Impact Statement (DEIS). We believe that the DEIS's preferred alternative, with some additional information and analyses, provides an environmentally acceptable plan for the proposed full field development.

We note that under the full field development alternative, rates of development for the full development alternative are determined by each company based on individual needs, and if the rate of development or well spacing increases and cumulative impacts are greater than those analyzed in the DEIS, additional environmental analysis may be required. In the event that additional environmental analysis becomes necessary, EPA would appreciate the opportunity to review this new information.

The DEIS provides a detailed analysis of potential impacts to the environment resulting from the proposed action. General and specific impact mitigation measures appear to be well conceived and practicable. We note that Louse Creek is an established trout stream, fishery utilizing many in-stream ponds along the drainage for resident over-winter survival. Planned development calls for road crossings and other activities near the stream which increase the likelihood of additional sediment loading and risk of hydrocarbon spills. EPA recommends that Louse Creek be added to the watershed monitoring and sampling as discussed on page 79 of the DEIS.

The DEIS needs to clarify which agency will have the lead authority to require any corrective actions that are needed in response to on-site monitoring. This should be discussed in relation to possible situations which could arise, such as hydrocarbon spills, inadequate sediment control best management practices (BMPs), or a blowout.

21

2

In accordance with the criteria that EPA has established for rating draft environmental impact statements, we have rated this draft EIS as category (D-2) (lack of objections-insufficient information). The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. Our review has identified additional analyses and the possible need for additional monitoring/question that should be in the final EIS. We would appreciate a copy of the Record of Decision when it is available. If you have any questions, please contact Mike Hammer of my staff at (303) 293-1716 or FTS 564-1716.

Sincerely,

Robert R. DeSain, Chief
Environmental Policy Branchcc: William Dickinson, DFA A-104
Kerry Clough, ARA BHM

Response to Letter 21

21.1. The watershed monitoring plan has been modified to include monitoring of macroinvertebrates in Louse Creek and three other streams.

21.2. This information has been added to the text in Chapter 4. Thank you for your helpful comments.



STATE OF WYOMING
OFFICE OF THE GOVERNOR
CHEYENNE 82002

March 3, 1987

MIKE SULLIVAN
GOVERNOR

Mr. Wally Mierzejewski
Bureau of Land Management
P.O. Box 1849
Rock Springs, WY 82802-1849

Dear Mr. Mierzejewski:

The draft environmental impact statement on proposed oil and gas field development in the Hickey Mountain - Table Mountain area has been circulated for state agency review. Copies of agency comments are enclosed for your consideration and use. While these comments express a number of concerns reflecting the varying agency missions, they also contain numerous suggestions which should help minimize and mitigate the potential impacts of full field development in the study area. These suggestions should be incorporated, where appropriate, into the agency preferred alternative and the proposed field development should be allowed to proceed in a reasonable fashion.

Admittedly, there will be some unavoidable impacts related to full field development in the study area. However, these impacts are not insurmountable and can be adequately addressed through concerted efforts of the companies and the various land and resource management agencies. Two areas that will require particular attention and cooperation are road locations and construction of river and stream crossings. A directly related issue is travel management. The information and experience developed through the Overthrust Industrial Association's Cooperative Wildlife Program should be utilized in addressing these concerns. Implementation of an environmental awareness program for company employees, similar to that used for Evan's Shute Creek project, should also be fully considered. A similar program to explain the purpose and details of proposed road closures and new travel restrictions to the general public may also be necessary.

Thank you for the opportunity to review and comment on this project. Please keep me informed of the progress in this effort.

Very Truly Yours,

Mike Sullivan

Mike Sullivan
Governor

MS:pcp
Enclosures

22

Response to Letter 22

22.1. We agree that roads and stream crossings are critical items for field development. In the final EIS we have identified further constraints to roading.

22.2. In the Hickey Mountain - Table Mountain project area, road density and travel management have been identified as potentially causing significant impacts to wildlife. Companies have been previously involved in funding of a baseline wildlife study for the area, and will also be involved in continued monitoring of wildlife impacts by agreement with WGFD. In this manner, objectives similar to the Overthrust Industrial Associations Cooperative Wildlife Program are being accomplished.

Environmental awareness training for project workers will be provided by companies. Programs to explain the purpose and details of proposed road closures can be made available to the public if requested.

Thank you for your comments. Your concerns for the area will be considered during the decision-making process.



THE STATE OF WYOMING

Game and Fish Department

February 27, 1987

MIKE MORTIMER
DIRECTOR

Mr. Warren White
State Planning Coordinator
Borahville Ridge
Cheyenne, WY 82002

Attention: Mr. Paul Cleary

Dear Mr. White:

In response to your notification 88-282, we have reviewed this document and offer the following comments and information for use in finalizing the impact statement and more effective planning of the O/G field development to avoid and reduce impacts to fish and wildlife resources.

PREFERRED AND RECOMMENDED ALTERNATIVES:

Based on the assumption agreed to by several agencies that significant disruptions to wildlife habitat use and distribution and recreational opportunity will occur under development levels of the "Proposed Action", the WFGD strongly supports the "No Action" alternative.

Drilling of several wells is scheduled to commence immediately upon finalization of the EIS, so we see little chance that the EIS will significantly affect the outcome of this development, and consider there to be little chance of delaying wells or limiting other developments, if that assumption is correct, the following alternatives are our second choice.

Page 33, Proposed Action - We recommend against construction of the collector road between Sage Creek road and the access road to Tawaco No. 1-12 well located in the southern portion of Sections 29 and N. 133N, R. 16W. This proposed road is located in the Whiskey Springs area. Wellbore construction and use of this road will disrupt elk spring migration patterns as much as the Whiskey Springs North Access collector road, which we also oppose. We recommend access to wells and processing plants be free

23



MIKE SULLIVAN
GOVERNOR

Response to Letter 23

23.1. Your comments regarding access to the northern Whiskey Springs Unit area will be considered during the decision-making process. However, as a minimum, roads must be designed for safety, considering the type of traffic that will use them.

23.2. This collector road alternative has been deleted from the Agency Preferred Alternative.

23.3. Wells proposed to be drilled in crucial ranges will be subject to seasonal restrictions to construction and drilling. Onsite analysis may determine additional measures which may reduce disturbance to big game. Companies have at this time abandoned plans to drill on top of Hickey Mountain.

23.4. The text has been modified as appropriate.

23.5. Problems experienced from the Louse Creek crossing mentioned were due to original construction, and have since been remedied.

23.6. This will be considered in the decision-making process.

23.7. New Sage Creek or Little Sage Creek road crossings would not be authorized under the Agency Preferred Alternative.

Mr. Warren White
February 27, 1987
Page 2 - 215 2793/L2.

the Sage Creek road in the south or the Red Ranch road from the north. We recommend the Whiskey Springs North Access collector road not be constructed, and the existing Red Ranch road should be closed to all vehicle traffic.

23.1

We recommend access to all well sites in the Whiskey Springs unit be from the south via the Cottonwood Mountain-Sage Creek road and not from the proposed collector road. The Cottonwood Mountain-Sage Creek road is currently identified as an access to wells in the area and it possesses sufficient visual buffers to vehicular activity to avoid significant disturbance to wildlife. We recommend a minimum standard road be constructed for this access route, if oil and gas products are to be transported by pipeline. We recommend the highest standard road be only a single lane with shoulders to minimize habitat degradation and maintain use of the center visual buffer adjacent to the road, in order to lessen impacts to wildlife in the area.

Collector Road Alternatives:

Page 19 - Our preference is the Existing Collector Only Alternative which would minimize excessive disturbance of a number of wildlife areas outside the current main collector route.

Bearing in mind the already-planned development, our second alternative would be no loop roads through any areas, as this will increase disturbance from energy-associated sources and the general public on wildlife species.

Taylor Ranch to Whiskey Springs Tie (3)

Page 21 - We oppose this new collector road between the Lucky Pitch and Taylor Ranch Units. This tie between the two units will increase traffic on relatively open slopes of Whiskey Mountain. As an alternative, we recommend the traffic to and from the Lucky Pitch Unit continue to access the area via the heavily-forested, visually buffered road currently in use.

Whiskey Springs North Access:

Page 21 - This alternative proposes construction of a collector road (1.9 miles) over an existing two creek primitive road, the area of road construction and increased oil field traffic is located in an important elk staging area during spring migration and is also used as a calving range. Use of this access would also result in development of a new road in the area. For these reasons, we recommend against this alternative.

23.2

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PROPOSED PLANT ALTERNATIVES:

Whiskey Springs Unit (3)

Page 21 - We support this alternative to minimize activity in the Sage Creek/Red Road area. However, this support is contingent upon the enlarged processing plant in Section 26 and is being increased by our recommended alternative of the Cottonwood Mountain-Sage Creek collector road. This would access the plant from the south instead of the north or west, eliminating traffic to the one larger site.

Product Transport Alternative:

Page 21 - To protect wildlife values, the transportation of oil and gas by pipeline, rather than by trucking and collector roads, is the alternative we prefer.

UNCONFINED WELL-SITES DERIVED FROM DEVELOPMENT:

The areas where Texaco Wells 8,9,10,11,14,16,17 are proposed are farming and calving areas for mile deer, moose, and elk. During moderate and severe winters, these areas are also winter range for these three species. The increased vehicular traffic associated with maintenance of the proposed wells and processing plant can be expected to displace big game efforts. Because of the importance of the area to big game, we recommend efforts to drill Texaco Wells 8,9,14,16,17 be abandoned.

23.3

Whiskey Mountain is an important wintering and calving area for elk. It provides the second largest known concentration of wintering elk in Utah County. Numbers of elk using the area vary by year, but use by a portion of the population is consistent. If the entire mountain is developed as proposed, this loss of habitat will probably decrease the number of elk that winter in Wyoming. Diamond Shamrock Wells 39-27 and American Quarter Wells 20-34 would significantly impact elk use of Whiskey Mountain. We recommend these two wells not be drilled or that they be moved from the top of the mountain to locations lower on the east side.

23.8. BLM and FS have the authority to regulate activities occurring on federal surfaces falling within their jurisdiction, but can only recommend to companies procedures to be followed on state or private lands. Because field development would occur over the interspersed private and state lands as well as federal, this EIS analyzes total effects. The Record of Decision will only include decisions regarding federal lands.

23.9. Text and table have been revised due to modified company proposals.

23.10. The text has been modified as appropriate.

23.11. Official company and agency business would make use of these roads, traveling to one regular destination. The roads would be closed to recreationists who would stop to get out of vehicles at irregular points, and who may be carrying firearms during hunting season, and cause greater stress to big game in the area than company or agency traffic in general.

23.12. BLM has no management authority over the many roads occurring in the north and east of the study area, except over oil and gas roads on the interspersed federal surface.

23.13. Modifications have been made to the text as appropriate.

23.14. The text has been clarified.

23.15. As the agency that manages wildlife populations, we have requested estimated "numbers" to be affected from you. You agency was unable to provide this information for this analysis.

23.16. No commercial timber sales are proposed within the study area on the current 10-year sale program. Sales may be proposed for the future. Any future sales would be analyzed for cumulative impacts with oil and gas development. Small sales (posts and poles, etc.) will be made available as needed.

23.17. See response to 23.11.

23.18. The text has been modified as appropriate.

23.19. The Air Quality Division, Wyoming DEQ has authority to approve plant emissions which are not expected to exceed maximum threshold levels.

23.20. Your revised proposal for wildlife monitoring has been added to Chapter 4.

23.21. The change has been made.

23.22. Measure changed to include construction of all facilities.

23.23. BLM has allocated forage for wildlife in this area.

23.24. We look forward to working with you in this effort.

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AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES TO FISHERIES RESOURCES:

- 23.4 The description of fisheries resources provided in the Affected Environment chapter of the DEIS (Table 3-4), could have been more accurate had the DEIS proponent better utilized the material provided in the wildlife technical report submitted by this Department. For example, the fish population data collected on Sage Creek during the winter and summer seasons gathered and therefore better reflects the current situation than the 1980 data that is presented in the DEIS. We recommend that the final EIS incorporate the more up-to-date information that is provided in the wildlife technical report.

After the wildlife technical report was submitted, the results of taxonomic evaluations of cutthroat trout from Sage Creek were received from Colorado State University. The results indicate that the Sage Creek cutthroat population is a Grade D purity of Colorado River cutthroat trout. The Grade D purity is the result of hybridization with Snake River cutthroat trout. The Wyoming Game and Fish Department's Colorado River Cutthroat Trout Management Plan includes possible upgrading of the purity and stream habitat enhancement in the future. We recommend this information be included in the final EIS and encourage the BLM and Forest Service work closely with the Fish Division of this Department to achieve the goals outlined in the Colorado River Cutthroat Trout Management Plan.

- 23.5 The proposed action (random field development) would undoubtedly cause adverse impacts on fisheries resources within the development area. Major impacts could result if spills or accidents occurred or if required mitigative measures are not rigidly enforced and closely followed.

Increased sediment input into Louse Creek due to an inadequately built and maintained road creating for access to Lucky Ditch Well #1 has already been documented. If inadequate erosion control and facility design are allowed to continue during future development, the cumulative impacts to existing fisheries will be significant.

Page 8 of the DEIS Map 2-1 indicates there will be three additional road crossings of Louse Creek, one crossing to upper Sage Creek, two crossings of Little Sage Creek, and one crossing of the Henry's Fork River. There are also pipeline crossings proposed for these streams. With the past problems that have been encountered on Louse Creek from the access road to Lucky Ditch Well #1, it is reasonable to assume that, unless enforcement and monitoring are substantially increased, adverse impacts to fisheries resources will continue. We recommend that the BLM commit to 1) very rigorous moni-

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- 23.6 toring and enforcement of the Standard Measures listed in Appendix C, and 2) requiring the developer to establish a force account to reimburse resource agencies for any repair to damaged fish habitat that may be necessary as a result of oil field development. If repair is not initiated within ten days after a problem is brought to the developer's attention, resource agencies should be able to effect repair at the developer's expense. In the past, the cost of restoring a single event in other areas of the state has ranged from \$10,000 to \$70,000.

- 23.7 Full field development definitely has the potential for degradation of Colorado River cutthroat trout habitat. The Wyoming Game and Fish Department mitigation policy objective for native game fish habitat is no net loss of like-kind habitat value. Due to these concerns we cannot support the proposed action. If full field development occurs we would favor the Agency Preferred Alternative with elimination of Sage Creek road crossings and avoidance of Louse Creek crossings. This alternative would eliminate a road crossing of the Henry's Fork and require piping rather than trucking of oil products. The no action alternative, however, would have the fewest impacts to fisheries and, therefore, would be the most desirable.

- 23.8 We recently received an updated list of pending actions for the Highway-Table Mountain EIS study area (copy attached). The fourth item on the list (circled) indicates that Oil Company will probably proceed with road access across the Henry's Fork River regardless of what is decided in the EIS. If this is allowed, how will the Standard Measures to Mitigate Environmental Impacts in Appendix C of the EIS be enforced? It was our impression that the BLM regulated orderly development of oil and gas fields and the setting of an EIS was necessary to identify concerns associated with this development. We question how a company can proceed with certain aspects of field development independent of the EIS and a final decision.

SPECIFIC DEIS COMMENTS:

- 23.9 Page 8, Table 2-1 - Only 32 wells are shown on the chart of well drilling schedules for 5 years. However, the scenario being reviewed is for 51 wells, therefore we feel the table underestimates the number of wells to be drilled at one time.

Page 18, Power Sources - Since the powerlines cannot be near hazardous situations such as overhanging trees, etc., the area cleared for the powerlines, especially through trees, will have to be kept clear. Therefore, these areas will not return to pre-disturbance conditions for the life of the project. If the road removal is extensive, additional habitat effectiveness for big game will be lost due to reduced cover.

23.25. See response to 23.16.

23.26. Reclamation attempts to return disturbed sites to their pre-disturbance character. In many cases, ensuring soil stability outweighs other concerns and fast success non-natives are used instead of native species. Appropriate seed mixtures, best suited for the site, are determined site specifically and authorized by the AO.

23.27. Site specific analysis will determine proper measures to be applied. In some cases, working heavy equipment over vegetation pulverizes topsoil creating difficulty for reclamation. In other cases, scalping of vegetation with no topsoil disturbance is appropriate.

23.28. Resource monitoring will be accomplished, funded in part by companies and in part by agencies. The Supplemental Task Force will accomplish these other tasks.

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Table 2-6 Summary of Impacts

Page 27 - In the column marked "Agency Preferred Alternative", there is an error/omission in the table. On line 3, the wording "all winter range, 77 acres" should be inserted.

- 23.10 Page 39, Paragraph 1 - Moose crucial winter range identified in the document is used every year by that species regardless of the type of winter. More animals will be seen in the area during more severe winters. This paragraph implies that areas are only used during bad winters.

Page 39, Section, Paragraph 1 - Reelins should be added to the list of raptors seen in the area.

Road Density Issues

- 23.11 Page 49 - Simply getting local access roads does not necessarily close the road, since roads are subject to daily maintenance work and administrative use.

Non-Forest Roads

- 23.12 Page 49 - We recommend the BLM consider incorporating the USFS road density index as a mitigation action on public lands even though it may be difficult to permanently close some access points. This feature should be added and thereby restrict road densities while providing isolated escape areas for wildlife.

Table 2-3 Recreation Use

- 23.13 Page 51 - Based on 1985 big game harvest reports and the estimate of 50% of elk and 35% of deer harvest in this herd coming from the EIS area, we estimate hunting WMA at approximately 3,000 - well above the 1,400 listed in the table. Hunting use of the area is being understated. The loss of opportunity to hunt in the area due to oil/gas displacement of animals would be much higher than estimated in the EIS.

General Impacts

- 23.14 Page 57, Para. 6 - We are in favor of reducing the road density, but by keeping open only those roads that serve oil/gas activities and closing all other primitive roads, the ability of the public to hunt the area and their

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desire to use the area will be severely limited. This is an impact that should also be mentioned.

Production and Collection Waste

- 23.15 Page 58, Para. 1 - This herd is also managed by the state of Utah, and their objective is to increase elk numbers above the current level. Oil/gas impacts to migrating, calving, and wintering elk in spawning will also affect Utah elk objectives. Loss of big game will hamper the ability of both states to attain management objectives. Part of the analysis of big game impacts should relate to herd objectives developed for these animals. Both USFS and BLM resource management plans indicate their land management would attempt to maintain habitat for these numbers. Total animals and recreation days lost are figures for resource losses which the general public can understand better than acres lost.

Road Density

Page 60 - Since the information used by the USFS to develop road densities is widely accepted data, we strongly recommend BLM and the State Land Board should also consider these stipulations for reducing road densities as a mitigation measure to reduce disturbance to big game in the area.

Commercial Timbering

- 23.16 Page 60 - Commercial timbering should be closely analyzed to ensure that cover around developments is not reduced to the extent that the area loses its ability to provide hiding cover for big game.

Impacts on Elk

Page 61, Para. 1 - To date, there have been no surveys for black-footed ferrets. Only the presence of suitable habitat was identified.

Transportation Systems

- 23.17 Pages 64-69 - Again, simply getting a road and stopping public use of roads does not make it "closed". If there is traffic from any route, whether administrative or oil/gas related, roads are still in use and therefore open. However, we do agree that lighter use would result in the road being placed into a lower class designation.

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Closure of primitive roads to compensate for opening of upgraded oil field roads suggests that impacts from these two different types of roads are of equal magnitude. We do not feel this is correct, since one road will experience heavy daily truck traffic, the other mostly seasonal light traffic. Therefore, closing a mile of primitive road for each mile of oil field access road opened will not mitigate the new improved access.

Access-oriented recreationists are aware that many oil field service personnel, once they gain access to the area behind the gate, engage in activities for which the general public is excluded in the closed area. This has been true in the areas north of Emmons and west of Big Piney in the Overbrook fault. Obviously, this is inappropriate. If the area is closed to an activity, it is closed to all for that type of activity.

Impact Socio-Economic

Page 73, Para. 284 - Manpower needed to develop wells and plant sites is underestimated. A temporary plant built last year required about 125 people, well above the estimated 20 people listed in the document for building the largest plant in the area. This underestimation of manpower will result in inadequate estimates of the number of commuters using collector roads and working within areas closed to the general public.

23.18

Economic losses due to reduced big game populations and decreased recreation should be analyzed for the region. There is no mention of the thousands of dollars which would be lost from the economy of the state as a result of development. Undoubtedly, as in all of these projects, all-gain benefits will outweigh losses, but the reader of the EIS should know what trade-offs are being approved. Otherwise, the economic impacts of the project are not fully analyzed.

Air Quality

Page 77 - This is only a discussion of air quality and emissions in relation to the San Plant. There will be six other processing plants built and emissions from these should be included to estimate the cumulative effects on air quality in this area.

23.19

Wildlife Monitoring

Page 78 - Wildlife monitoring presented here is inadequate to evaluate impacts to the resource for the life of the project or even for the development phase. This impact is expected to last 7-12 years, but WSD will only

23.20

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be monitoring for 3 years. An enlarged monitoring package should be developed for the area. Continuous monitoring is needed until the end of the development phase, then there should be periodic monitoring during the production life of the project.

23.20

Table 4-1

Page 36 - Seasonal range designations for moose and deer crucial winter range are incorrectly put in as "crucial".

23.21

APPENDIX E - RECLAMATION GUIDELINES

Wildlife Management

Pages 101-102, #1-14 - We support the measures listed. In addition, the following should be added:

23.22

"Only linear facilities are required to seasonally avoid crucial habitats to minimize disruption to wildlife. These guidelines should be extended to include non-linear activities such as well drilling and plant construction."

Separation of human activity throughout the affected environment limits use of alternative ranges by displaced big game during calving and the winter. An effort should be made to schedule drilling of wells, construction of plant sites, timber harvest and firewood salvage so that there are adjacent range sites suitable for escape cover and alternative seasonal use within the area. This effort should be coordinated with the State Forester in order to be effective.

23.23

Perhaps the most important factor for elk wintering on Sickey Mountain is the availability of forage. Vegetation on top of Sickey Mountain is predominantly creosote, and we recommend that sufficient acre be allocated for elk wintering there, if development in the area reduces forage production in adjacent areas utilized by that species.

23.24

Finally, there should be a cooperative program to minimize short-term impacts to wildlife, including displacement and losses from poaching. A program similar to this was implemented on the Blue Creek Tract project in Lincoln County, and on the Annona Railroad Tract. We believe the program was effective in reducing game law violations and heightening awareness of potential wildlife problems, and we offer our assistance to those companies involved.

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Forest Products Management (add in #10-22)

- 23.26 Page 100 - All existing timber areas should be protected by restricting timber harvest on RLM and USFS land until after field development. These timber areas will provide security cover for big game during the period of greatest disturbance.

Seeding and Planting

- 23.28 Page 100 - Vegetative reclamation should be aggressively pursued. Revegetation should be directed toward increased plant species diversity to benefit wildlife in the area after development. Reclamation should be done with native species, and reclamation conditions should exceed the pre-disturbance condition to help compensate for long-term wildlife habitat losses. Key plant species utilized by wildlife should be planted/restored by the reclamation program.

We suggest adding to this section: "On disturbed male deer winter range, existing native shrubs will be replanted to approximate vegetative composition and diversity of the site before disturbance."

Spill/Response Replacement

- 23.27 Page 100, Para. 5 - Along pipelines, topsoil should only be stripped back as far as necessary to lay the pipe, to minimize unnecessary disturbance. Shrub clearance should only occur where absolutely necessary to lay the pipe.

- 23.28 We recommend all companies involved in the Hickey Mountain-Tahla Mountain oil/gas field development contribute funding to a wildlife monitoring program to be conducted throughout the development phase of this project. This program would be designed to assess the effects of field development on resident and migratory wildlife populations in the study area. The program will include a full-time wildlife biologist to act as an advisor and liaison between oil and gas companies, WDF, RLM, and USFS. The biologist will be involved in all phases of field development which impact wildlife resources. Annual meetings will be conducted between representatives of oil and gas companies, RLM, USFS, and WDF to evaluate impacts, review monitoring programs, and distribute information on oil/gas wildlife updates and future developments and aspects.

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Please forward these comments to the appropriate federal and state agencies and contact us if we may be of further help.

Sincerely,

Francis Petrus
FRANCIS PETRUS
ASSISTANT DIRECTOR
OPERATIONS

FF:SDM:enc
att:SDM:enc
cc: DGM Div.
Fish Div.

Although we congratulate the DEIS preparers on their treatment of landslides in this report, we do note that our contributions to this effort were not referenced. Also, a reference to Stillwell, 1984, which appears in the 1st paragraph on page 55, is not included in the reference list on page 118 of the report.

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- 3) Due to the permeable characteristics of the Bishop Conglomerate Aquifer, special precautions should be taken when conducting the test pits. Consideration should be given to monitoring the shallow aquifer in the area of the pits.

During well drilling, precautions should be taken to minimize the amount of mud lost to the formations. This is particularly critical when considering the Bishop Conglomerate Aquifer. Due to the permeability of the aquifer and the depth of the aquifer, any contamination of the aquifer would apparently directly impact the streams and springs in the area. The use of air rotary drilling rigs may be, from an environmental standpoint, a preferable alternative.

- 4) Appendix C Item 23 - The WQD will permit injection only into Class VI aquifers. A Class VI aquifer is defined in Chapter VIII of the VI Water Quality Rules and Regulations.
- 5) If a waste pit is utilized to service more than one well, the DEQ Water Quality Division must issue a permit to construct. If there is only one well per waste pit, the Wyoming Oil and Gas Commission would issue the permit. This condition may change pending the outcome of proposed legislation.
- 6) If the U.S. Forest Service or BLM require removal of wastes from the pit(s), then disposal should be at a DEQ - approved site.
- 7) Any sanitary facilities constructed need to be permitted by the State County Planner if they will handle less than 2000 gal./day of domestic waste, or by the DEQ Water Quality Division for facilities which handle more than 2000 gal./day. A general statewide permit may be obtained for several facilities of the same design.
- 8) If any sanitary facilities will be discharging, an NPDES permit will be required from the DEQ Water Quality Division.
- 9) A Permit to Construct may be required for certain types of sediment control structures. Discharges from sediment control structures may need to be permitted under the NPDES system.
- 10) Appropriate erosion control methods should be implemented for all land disturbing activities. The Army's Ford and Sage Creek are classified by the DEQ as Class I of the Wyoming Water Quality Rules and Regulations stipulates that "in all Class I and II waters the discharge of substances attributable to or influenced by the activities of man shall not be present in quantities which would result in a turbidity increase of more than 10 NTU's". Additionally during the construction phase, it would be useful to require more frequent sediment monitoring to ensure that the 10 NTU limit is not exceeded.
- 11) All bridges, stream crossings, or any construction activities in perennial streams will require a Section 401 Permit from the U.S. Army Corps of Engineers and Section 401 Certification from the DEQ.

- 12) Because the proposed oil field activities, could reasonably be expected to discharge oil into sensitive waters of the state, an oil spill Prevention, Control and Countermeasure (OPCC) Plan should be developed in accordance with criteria contained in 40 CFR, Part 112, dated December 11, 1978. The Plan should address in detail the immediate availability of oil spill containment and cleanup resources, such as sorbent materials, T-atchos, use of telescopic, horsepower, methods to pick-up oil from water surfaces, etc.

The following list of DEQ staff, their responsibilities and phone numbers is provided to assist in obtaining additional information and in answering questions which may arise as a result of the above comments.

STAFF MEMBERS

Chris Norman Oil/Drainage Protection
John Sedasson Permits to Construct
Cody Wagner NPDES Discharge Permits
Nicholas Carnevale Section 401 Certification, Erosion Control
Lobby Fausner Spill Response

RESPONSIBILITY

PHONE NUMBERS

(307) 277-

771-1087

332-2114

771-1082

771-1081

771-1095

one



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Department of Environmental Quality

Administration Air Quality Division Land Quality Division Solid Waste Management Program Water Quality Division
(307) 777-7857 (307) 777-7881 (307) 777-7882 (307) 777-7883

MEMORANDUM

TO: Randolph Wood, Director

FROM: Bob Gronewald, Solid Waste Program

DATE: February 12, 1987

SUBJECT: SWP comment on Hickey Mountain-Table Mountain draft environmental impact statement

The Solid Waste Program (SWP) would like to provide the following comments on the Hickey Mountain-Table Mountain draft environmental impact statement:

1. Waste management procedures for the active drilling sites are not discussed in this document. The operators must be made aware that solid wastes from these sites must either: a) be hauled to permitted municipal landfill after permission is received from the landfill operator, or b) be hauled to a permitted industrial waste site. If the latter option is chosen, we typically permit a single industrial waste site for an entire field; this practice requires the operators to provide the needed regulatory information for a single site, rather than the multiple sites that would be necessary if disposal pits were sited at individual well sites.
2. If dewatered drilling mud is to be removed from the well sites following completion of drilling, the SWP would be involved in permitting this disposal. The draft EIS states that "normally" the mud pits will be dewatered, solidified in place and reclaimed, in which case the operators would not require a permit from this Program.
3. There is no mention in the EIS of solid waste management practices at the proposed gas processing plants. I have attached a copy of the guidelines that SWP has proposed to use in regulating wastes from these plants. This Program requires that gas plant operators obtain industrial waste permits unless they haul all solid waste to permitted Type I municipal landfills (with permission of the landfill operator). Gas plant operators

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Woods-Randolph Wood
February 12, 1987
Page 2

Must adequately characterize all waste streams whether the wastes are disposed into a dedicated industrial waste site or hauled to a municipal site. The tests recommended for characterization of the wastes are described on pages 2-3 of the attached gas plant solid waste guidelines.

We appreciate the chance to comment on this draft EIS. Should you have any questions regarding these comments, feel free to contact me—my new extension is 7740.

Attachment

July 1, 1986

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WYOMING DEQ-SNM GUIDELINES FOR GAS PLANT SOLID WASTE DISPOSAL SITES

INTRODUCTION

Due to the recent discovery of the unauthorized disposal of industrial solid waste materials at natural gas plant sites in the state and because this type of activity may be occurring at other gas plant facilities located throughout the state, the Department proposes the following guideline for gas plant companies to come forward and indicate the presence of such facilities without attendant personnel conducting a site inspection. This specific guidance has been generated with the cooperation of representatives of the Petroleum Association of Wyoming (PAW) and considering their specific inputs and concerns. Department Personnel feel that the following guidance allows evaluation of the illegal disposal sites in a fair and environmentally sound manner and assures the adequate management of these specific wastes.

This document is a DEQ-SNM Program guideline on the past unpermitted disposal of solid wastes from gas plant sites. Nothing in this guideline is intended to abrogate the rights of companies regarding exempted Resource Conservation and Recovery Act wastes. Company participation in the actions outlined in the guideline is voluntary.

Notification

Beginning July 1, 1986, and for five months thereafter (until December 1, 1986) DEQ-SNM will exercise its discretion to not seek legal action against gas plant companies for the past operation of unpermitted solid waste disposal sites if the following conditions are met:

1. By December 1, 1986, the reporting company shall submit a brief letter describing the facility and its legal location.
2. By December 1, 1986, the reporting company shall submit a report describing the geology and depth to groundwater at the site. In the absence of existing information, the company must provide adequate data to make this determination.
3. The reporting company shall act in a good faith effort.

Waste Management Options

Interim Waste Management

In the interim period (July 1, 1986 - December 1, 1986), gas plant solid wastes may be accumulated on-site in such a manner that all free liquids are contained, the material may be disposed of in a DEQ-SNM approved facility on-site or into a Type I municipal landfill site designated by DEQ-SNM provided the following conditions are met.

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1. No waste defined as hazardous under 40 CFR, Part 261 and in the required EPA quantity limitations, shall be deposited into municipal landfill sites.

2. Those gas plant processing wastes in quantities less than the EPA required quantity limitations that are determined to be reactive and ignitable under the EPA Federal hazardous waste criteria, shall be rendered nonreactive and nonignitable prior to landfill disposal.

3. Only waste containing no free liquids shall be disposed of. Those filters containing liquids shall be drained and stored in open containment for 30 days prior to disposal to render them a nonliquid waste material.

4. All waste shall be covered upon disposition at the designated municipal landfill site.

5. Municipal landfill operators shall be notified by the company prior to arrival of the solid wastes at the municipal landfill or a prearranged waste delivery schedule shall be negotiated by the company and landfill operator prior to arrival of the solid wastes at the municipal landfill site.

Final Waste Management

Closure and Discontinued Site Status

From the initial report submitted, if DEQ believes there is a sound basis that groundwater contamination has or could occur, the company may be required to conduct a groundwater assessment of the site. Otherwise, the reporting company may discontinue use of the site and close and isolate it. Closure shall be accomplished by grading, supplemented with clean fill as necessary, to the approximate natural topography of the location. The final grading shall be accomplished to promote adequate surface water runoff and to prevent the ponding of surface water over the completed portions of the site. The final graded and closed facility shall be permanently isolated from humans and animals. This shall be accomplished by:

a) revising the engineering plan for the gas plant facility to specifically describe the precise location of the waste disposal site and designate it as such to prevent its future excavation;

b) filing a notice or other instrument suitable for recording in the office of the register of deeds (County Clerk) of the specific county, which specifically describes the precise location of the disposal site and designates it as such.

- c) posting warning signs at the waste disposal site;
- d) adequate fencing to isolate the disposal site from the public and wildlife.

Upon completion of the closure activities, a report shall be submitted and approved by DDO certifying that remedial measures have been properly accomplished.

If a reporting company chooses to permit the facility, the necessary permit, application information shall be submitted to DDO-SWM by January 1, 1987.

If it is determined (by gas plant companies) to dig up and remove for disposal the wastes deposited into the unauthorized site, the company shall submit a waste excavation and removal plan to WDO-SWM for approval prior to removal of the deposited wastes. Upon the satisfactory completion of waste removal, the company shall notify DDO that the wastes have been excavated and removed.

If DDO-SWM and the reporting company cannot agree to remedial actions at the site, DDO-SWM may take legal action to enforce its rules and regulations to require implementation of remedial measures.

Continued Disposal of Waste in Wyoming

Within the same five months, companies which plan to dispose of gas processing facility solid wastes within the state of Wyoming will first develop and submit a solid waste analysis plan for each facility to DDO-SWM for approval. This solid waste analysis plan should include the following:

- a. Type of facility
- b. Location and site description
- c. Estimated volumes and types of disposed solid wastes
- d. Analyses to be performed
- e. Process "block flow" diagrams indicating waste generation points

The specific waste analyses plan shall include at a minimum the following Test Protocol:

1. Reactive sulfide: EPA SW-846 as modified by July 12, 1985, U.S. EPA guidance memorandum or equivalent.
2. Ignitability: Ignitability shall be determined by EPA SW-846 Method 1310-Petroleum Wastes closed cup flash point, or equivalent, for liquid wastes only.

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3. Corrosivity: pH as determined by EPA SW-846 Method 9040, or its equivalent.

4. Oil Analysis: As determined by EPA SW-846 Method 1330 for non-oily wastes or by EPA SW-846 Method 1330 for oily wastes. Analyses for the following parameters need to be conducted:

- a. Arsenic
- b. Barium
- c. Cadmium
- d. Chromium
- e. Lead
- f. Mercury
- g. Selenium
- h. Silver

The criteria to be used to assess EPA hazardous characteristics are as follows:

- Ignitability: Flash point <140 degrees F.
- pH: X less than or equal 2, or X is greater than 12.5

<u>Reactivity - Sulfide</u>	100 mg H ₂ /kg waste
<u>Oil Analysis</u>	Arsenic 5.0 mg/l
	Barium 100.0 mg/l
	Cadmium 1.0 mg/l
	Chromium 5.0 mg/l
	Lead 5.0 mg/l
	Mercury 0.2 mg/l
	Selenium 1.0 mg/l
	Silver 5.0 mg/l

5. The TCLP test procedure as described in Attachment I should be used for preparation and analysis of leachate samples, unless a more detailed Toxicity Characteristic Leaching Procedure (TCLP) is published in the Federal Register by December 31, 1986. The following additional organic indicator parameters shall be analyzed for in the leachate:

- a. Benzene
- b. Toluene
- c. Xylene
- d. Carbon disulfide

If the waste sample to be tested is considered to be oily (3% oil) and as such can not be tested using the TCLP test procedure, the company shall submit a similar, laboratory approved test protocol to analyze the sample for the above indicator organic parameters.

-4-

Response to Letter 26

Public Service Commission

FILE #88-288

122 W. 26TH STREET HERSCHEL BUILDING CHEYENNE, WYOMING 82002

C. E. "BOB" JOHNSON
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MEMORANDUM

TO: WARREN WHITE, COORDINATOR
STATE PLANNING
FROM: JON F. JACQUOT
DATE: FEBRUARY 23, 1987
RE: BUREAU OF LAND MANAGEMENT HICKEY MTN - TABLE MOUNTAIN
OIL AND GAS FIELD DEVELOPMENT DRAFT ENVIRONMENTAL IMPACT
STATEMENT - STATE IDENTIFIER NO. 86-282

Please find attached two memoranda written by Robert Larsen, our Lead Electrical Engineer, addressing the subject matter. Since Mr. Larsen wrote these memoranda, the Commission, in order to expedite this matter, has determined that it will receive and consider applications from the two potential serving electric utilities without their having obtained public right of way for a specific route.

As indicated by Mr. Larsen, Utah Power and Light intends to serve this load by extending a 138 KV transmission line from its Painter Reservoir substation. Bridger Valley Electric Association, Inc. would serve this load with a 138 KV line extended from the Fleming Gorge area.

Our gas engineering staff has no comment to make on this matter. Thank you for the opportunity to comment.

Enc.

Jon F. Jacquot

Response to Letter 27

27. Thank you for your comment and interest in the project area.

7/1
1/2/87

MEMORANDUM

TO: JON JACQUOT
FROM: BOB LARSEN
DATE: JANUARY 26, 1987
RE: STATE IDENTIFIER NO. 86-282 HICKEY MTN - TABLE MTN. OIL
& GAS FIELD DEVELOPMENT RLM DRAFT E.I.S.

It is Commission policy not to schedule a public hearing for a Certificate of Public Convenience and Necessity until rights-of-way are obtained from all public land-managers. The BLM, U.S. Forest Service, and State of Wyoming have land in the area. Due to the sensitive nature of the soils, animal habitat, streams containing native cutthroat trout which need to be crossed,aptor nesting areas, etc., it is anticipated that obtaining these public rights-of-way will be a long, arduous undertaking.

There will be two utility companies contesting with each other to serve electric power to this development. They are Bridger Valley Electric Assn., Inc., Mountain View, Wyoming and Utah Power and Light Company, Cheyenne, Wyoming. Both companies presently believe they are entitled to serve this development. It will probably require a PUC public hearing to decide who will serve the load. Availability of rights-of-way could have a bearing on the outcome of the utility selected. The utility company not given the right to serve the development may request the matter be taken to court.

Sun Oil Company has stated it needs power within two years. The preceding discussion indicates the determination of the serving utility will take more than two years unless rights-of-way granting are expedited to issue a P.S.C. public hearing in the very near future.

It is recommended the location of the utility company substation be determined immediately so the rights-of-way for power lines can be initiated.

Please forward these comments with the gas engineers comments before February 24, 1987.

/s/



MEMORANDUM

TO: JON JACQUOT
 FROM: ROBERT A. LARSEN
 DATE: JANUARY 26, 1987
 RE: WICKY MOUNTAIN - TABLE MOUNTAIN OIL AND GAS FIELD
 DEVELOPMENT IN THE SOUTHEAST PORTION OF UINTA COUNTY

This is to update your memorandum of January 12, 1987, as a result of our January 23, 1987, meeting with Rosemary Richardson-Jensen and John Everett of Utah Power and Light Company on the referenced matter.

The size of the land was confirmed as using 15 bagamutta. But Utah Power and Light Company proposes service from Painter Substation rather than Anschutz Ranch.

The main point of the meeting was whether or not this territory was certificated only to Bridger Valley Electric. Utah Power and Light Company, based upon research by their 1986 attorney, Bruce Avey, of P.S.C. Buckle files, maintained in the meeting that their right to serve this area was not discontinued when Bridger Valley was certificated to serve the area.

/sp

Response to Letter 28

28. Thank you for your comment and interest in the area. Cultural resources inventory and treatment plan have been added to Appendix B.



**Wyoming State
 Archives, Museums & Historical Department**

Harvett Building State Historic Preservation Office
 Robert D. Bush, Ph. D. Cheyenne, WY 82002
 Director
 307-777-3222

January 27, 1987

Mr. Warren White
 State Planning Coordinator
 Herscher Building, 2nd Floor East
 Cheyenne, Wyoming 82002

RE: Wicky Mountain - Table Mountain Oil & Gas Field Development

Dear Mr. White:

Fred Chapman of our staff has received information concerning the aforementioned project. Thank you for giving us the opportunity to comment.

Management of cultural resources on Bureau of Land Management projects is conducted in accordance with a memorandum of understanding between the BLM and the SHPO. The MOU calls for survey, evaluation and protection of significant historic and archeological sites prior to any disturbance. Provided the BLM follows the procedures established by the MOU, we have no objections to the project. Specific comments on the project's effect on cultural resource sites will be provided to the BLM when we review the cultural resource report.

If you have any questions please contact Mr. Chapman at 777-6520.

Sincerely,

Thomas E. Murreau

Thomas E. Murreau
 Deputy SHPO, Programs

FOR:
 Dr. Robert D. Bush, Ph.D.
 State Historic Preservation Officer

TEM:ckalm



THE STATE OF WYOMING

29
FEB 18 1987
MEXE KULLMAN
ENGINEER

State Engineer's Office

HERSCHEL BUILDING February 11, 1987 CHEYENNE, WYOMING 82002

MEMORANDUM

TO: Paul Cleary, Natural Resources Analyst
State Planning Coordinator's Office

FROM: Frank J. Treleasa, Assistant State Engineer

SUBJECT: State Identifier No. 88-282
Rogers Mountain - Table Mountain Oil and Gas
Field Development

This office has no particular concerns relative to this oil and gas well field development.

It is necessary for the BLM and/or operators in the area to apply for temporary permits to use water for construction purposes such as road construction, well drilling, and other temporary uses. Since many of the streams of the area are highly appropriated covered with streamflows, particularly in the irrigation season, water may not be available due to the exercise of senior priority irrigation water rights. During the fall, winter and spring, water may not be available to a new priority temporary use permit due to the filling of reservoirs. During these time periods, it may be necessary for the temporary water users to obtain water from existing appropriations through water agreements filed with and approved by the State Engineer.

Attachment
Referral Memo

Response to Letter 29

29. Thank you for your helpful comment. Temporary permits for water use have been added to Table 1-1.

Response to Letter 30

30.1. We believe the Wyoming Oil and Gas Conservation Commission would have jurisdiction over oil and gas activities on state lands.

30.2. Due to the short anticipated period of employment, workers are not expected to move families into the area. The small number that do, should find area school attendance below capacity. New schools would not be needed.

30.3. BLM and FS personnel will monitor project compliance on public and National Forest lands. Project compliance will deal with all phases of the project, from construction and drilling, though use and abandonment of the project.

30.4. Obliteration of designated roads not required for future use is more successful than gating alone. This is due to two factors: two track or primitive roads may commonly channel water creating erosion and motorists may bypass the gate and continue using the road. However, gating may be considered in specific cases.

30.5. Thank you for your comments. Your concern for the area will be considered during the decision-making process.

30

February 17, 1987

MEMO TO: Carl E. Johnson, State Forester

FROM: Dana Stone, District Forester

RE: Comments on Mickey Wm./Table Mtn. Draft EIS

After looking over the enclosed draft EIS, I have the following questions and comments:

- 30.1 On pg. 5: After the permits are issued by the various State agencies, who is responsible for the inspections for compliance for these permits.
- 30.2 On pg. 7, 75 & 76: No mention of any impact to the school system in the valley by the labor force of 150-200 temporary people. Would new schools have to be built and then become vacant when the construction phase is over?
- 30.3 On pg. 11: Is the BLM responsible for inspection on all lands or just Dept. of Interior lands? Is the BLM responsible only for drilling rig inspection or all phases of drilling and construction. The wording of "would generally" should be changed to "would be" in regard to surface disturbance for well sites near surface water and riparian areas.
- 30.4 On pg. 13: All roads should be built to the same standards throughout. Does the State road specifications agree with BLM standards? What does partially reclaimed mean in relation to a road? If it means being ripped up obliterated, I feel that it is not sound judgment. If it means gating and allowing it to go back to nature gradually, I feel that it is sound management. This gating would allow for other resources to be harvested and managed. It would also allow for better protection from a major forest fire.
- On pg. 14: I would favor the building of Bm's treatment plant in section 10-12-11 to the alternatives proposed. I would strongly urge that the plant site be built in an existing stand of timber as opposed to the young stand created by an old cut. This would do two things: get rid of a firewood stand of timber and would leave better cover for big game.
- On pg. 19: I favor the alternative that does not allow Bm to build a loop road from 21-12-11 to 16-12-11. There is no need for this road. They use existing roads.

As you can see, I'm in favor of this field being developed. I believe that if the respective agencies keep a watch on the companies and the companies respect the environment this field can be developed with very little adverse effects. I think that if the US Forest Service can integrate their timber program and allowable cut to well site development, they can have a beneficial effect on the mountain area and a mitigation problem. I also feel that in the long run the wildlife will benefit because with the roads there will be more opportunity to harvest trees and open up the lodgepole pine desert that occurs in a lot of this area.

Recreation in its many forms will be enhanced by this field. Sure there will be some times such as July-December 1987 that the activity may deter from a pristine experience, however with the added access more areas will become more accessible. Even with road closures people will be able to get around better. However, if this area is not managed with a strong hand and a good public education program on the part of the public agencies, major problems could exist.

DAS:eb



1860 Lincoln Street Suite 404 • Denver, Colorado 80296
303/860-0069

March 2, 1987

Mr. Wally Mierzejewski
Bureau of Land Management
Rock Springs District Office
P. O. Box 1869
Rock Springs, WY 82902-1869

Dear Mr. Mierzejewski:

On behalf of the Rocky Mountain Oil and Gas Association (RMOGA), I would like to take this opportunity to comment on the Draft Wickey Mountain-Table Mountain Oil and Gas Field Development Environmental Impact Statement (DEIS). As you know, RMOGA is a trade association whose members account for more than 90% of the oil and gas exploration, development and transportation activities in the Rocky Mountain West. Therefore, we are concerned with the manner in which the federal government administers these activities.

We would like to point out that RMOGA fully supports the development of an oil and gas field in the Wickey Mountain-Table Mountain Study Area, while we support the BLM's decision to approve the development of this field, we have several concerns with the manner in which the DEIS has been developed as well as the decision to prepare an EIS on the proposed development.

While we realize that full field development proposals require an analysis of the reasonably foreseeable environmental impacts and the mitigation measures which must be utilized to avoid or minimize these impacts, we are unsure why the BLM found it necessary to prepare a full EIS on the development of this field. As the BLM points out in the EIS, oil and gas activity is not new to the area, not only were several units previously approved, but oil lease wells have already been drilled which received prior approval. In light of these previous activities, it would seem that an Environmental Assessment (EA) would have provided ample direction and documentation. In fact, the BLM did prepare an EA, but it was never publicly released. The decision and the timing involved in preparing the EIS was such that many operators were required to halt their proposed drilling activities due to a drilling moratorium that was placed on the area pending completion of the DEIS. In our opinion, such delays should not have occurred. It is the responsibility of the federal government to ensure that energy activities proceed in a reasonable manner without undue delays.

Of further concern is the scope of the EIS. We believe that an analysis of the 19 actual drilling proposals would have been more appropriate rather than basing the document on maximum potential development. The BLM admits that the

31

Response to Letter 31

31.1. Proposed stipulations would apply equally to one or many wells, roads, pipelines, or plant sites. The objectives of agency administration of this project are to allow production of mineral resources while providing basic protection to the natural resources in the area.

31.2. Appendix C, now Appendix B has been reorganized with specific measures clarified. Thank you for your comments.

31

March 2, 1987

Mr. Wally Mierzejewski
Bureau of Land Management
Rock Springs District Office
page two

projection of 81 production wells and 14 injection wells is considerably beyond the geologic capability of the study area. Therefore, it appears that the BLM wasted time and effort studying a development plan which will never take place.

As a result of the inflated scope of the document, we believe it is possible that the impacts are also inflated. Therefore, it is conceivable that the stipulations identified in the Preferred Alternative would have been less stringent if a more reasonable development scenario were analyzed. We believe a more pertinent document would have resulted if the EIS had addressed a more reasonable drilling projection. If at some future date it turned out that more wells were needed, it would have been within the BLM's authority to refile them on a case-by-case basis through the use of a categorical exclusion or to tier a short environmental analysis to this EIS.

With regard to Appendix C, we are unsure as to the intent of Resource Measure 3 which is located on Page 101. This Resource Measure indicates that should the authorized officer determine that rehabilitation of temporarily disturbed areas within critical wildlife habitat will not be successful within five years, the company will be required to compensate for the lost habitat. Such offsite mitigation requirements were originally included in the Draft Resource Management Plan (RMP). However, these requirements were deleted in the Final Plan. Therefore, we question the inclusion of this requirement in this DEIS. Under what authority can the BLM require such offsite mitigation? In any event, if the BLM can document that it does legally have this authority, the specific areas subject to this requirement should be cited in the DEIS.

In general, we recommend that Appendix C be reorganized. This Appendix promotes confusion as to what mitigation measures are actually going to be required in certain instances because they are scattered throughout the Appendix. Furthermore, the Appendix is repetitious and inconsistent. We believe that the BLM should revise the Appendix to contain one section which deals with reclamation procedures in a consistent manner and without duplicative requirements, in order to more clearly identify the mitigation and reclamation procedures which must be followed during the development of the field.

In conclusion, we appreciate this opportunity to provide you with our comments. If you have any questions, please do not hesitate to contact us.

Sincerely,

Wally Mierzejewski
Wally Mierzejewski
Public Lands Director

AFB:cw



Diamond Shamrock
Exploration Company

32
RECEIVED

MAR 14 1987
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
ROCK SPRINGS, WYOMING

FEDERAL EXPRESS

March 3, 1987

Mally Mierzejewski, Team Leader
Bureau of Land Management
Rock Springs District Office
Highway 101 North
Rock Springs, Wyoming 82901

Dear Mr. Mierzejewski:

Diamond Shamrock Exploration Company, Unit Operator for the Taylor Ranch Federal Exploratory Unit, submits these comments concerning the draft Hickey Mountain-Table Mountain Environmental Impact Statement (EIS) on proposed oil and gas field development.

- 1) The drilling of the Taylor Ranch Federal #33-3 in the NW/4SE/4 of Section 33, T13N-R14W, encountered productive Dakota sandstone in paying quantities.
- 2) Although the Taylor Ranch Federal #33-3 was drilled not more than two miles from four existing Dakota producers, this location failed to prove continuity of the Dakota Formation underlying the Taylor Ranch Unit.
- 3) As this well further proved the Dakota Formation underlying the Taylor Ranch Unit to be multi-layered with characteristic porosity pinchouts and authigenic clay infilling, this Unit will not be geologically capable of pressure maintenance.
- 4) Diamond Shamrock Exploration Company continues to emphasize the original proposed action for the Taylor Ranch Unit to be unrealistic given the information obtained from the five current producers and the one dry hole.

(Continued)

Diamond Shamrock Exploration Company is a subsidiary of Diamond Shamrock
Box 2900, 275 17th Street, Denver, Colorado 80202, Phone 303 576-0200

Response to Letter 32

32. Thank you for your helpful comments.

32

LETTER
Mr. Mally Mierzejewski
March 3, 1987
PAGE TWO

As always, I am willing to further discuss, in detail, the findings of the EIS at a time and location convenient to your office. I can be contacted at (303) 575-3268.

Thank you.

Sincerely,

DIAMOND SHAMROCK EXPLORATION COMPANY

Carey L. Brady

Carey L. Brady
Petroleum Engineer

CLB/jlt



33 **PETROLEUM ASSOCIATION OF WYOMING** a division of Rocky Mountain Oil and Gas Association

881 Warner Court, Suite 100
Casper, Wyoming 82401
(307) 254-6338

Wayne F. Nebeker
Executive Director
Wayne F. Nebeker
Associate Director

March 2, 1987

Mr. Wally Miersajewski
Bureau of Land Management
Rock Springs District Office
P.O. Box 1890
Rock Springs, Wyoming 82902

Dear Mr. Miersajewski:

On behalf of the Petroleum Association of Wyoming, a division of the Rocky Mountain Oil and Gas Association, whose members account for more than 90% of the exploration and production in Wyoming, please accept the following comments on the Rocky Mountain-Triple Mountain Oil and Gas Field Development Draft Environmental Impact Statement.

The summary section indicates comments involved in the study area were requested to provide plans of development for the four oil and gas units and associated nonunit area based on "maximum potential development". The summary also states, "Recently acquired geological information indicates that development in the extent described in the proposed action may not be fully achieved." In light of this new information and selected alternative, the EIS is probably already obsolete. It was premature and unrealistic to request development plans from commenters based on maximum full field development. A more honest scenario could have been developed in an environmental assessment utilizing more moderate figures. Considering the severe downturn in the oil and gas industry and the introduction of new geological data, it is extremely unlikely full field development, as described in this document, will ever transpire. This EIS is, therefore, based on inflated expectations and has been prepared unnecessarily.

Appendix C (pages 85-111) contains important information on lease and APT restrictions. However, it is very repetitive, unorganized and at times contradictory. For example, numerous requirements for site restoration are scattered throughout the Appendix. For consistency and clarity these requirements should be contained in one section, i.e., Reclamation Guidelines. The entire Appendix C should be reviewed and rewritten to eliminate duplicative and contradictory requirements. Regulations should provide for flexibility or waiver on a case by case basis where appropriate.

33.1



881 Warner Court, Suite 100
Casper, Wyoming 82401

Mr. Wally Miersajewski
March 2, 1987
Page 2

33

The Oil and Gas Conservation Commission regulates Class II underground injection control wells in Wyoming, not the Department of Environmental Quality. This correction should be made on pages 5, 15 and 103.

Resource measure number three (page 101) requires compensation for "loss habitat" under certain circumstances. This offset mitigation requirement must be used cautiously and is not appropriate for drilling and production operations. In any event, it is unlikely the offset habitat area could be substituted sooner than the location under rehabilitation. This concept needs to be applied carefully and considered only in cases of very large facility operations.

In conclusion, this planning document appears to be poorly timed. Some development wells have already been drilled, some exploratory wells are tentatively planned and some company operating plans have already been approved. The current downturn in the industry will severely affect future plans for this study area conducting the proposed action inappropriate or hasty. This study area conducting the proposed action inappropriate or hasty. This study area conducting the proposed action inappropriate or hasty. This study area conducting the proposed action inappropriate or hasty.

Thank you for the opportunity to comment.

Sincerely,

Wally Miersajewski
Wally Miersajewski

cc: D. Thomas Edd
Bob Byron
Neal Fern
Alice Benitez

Response to Letter 33

33.1. Appendix C, now Appendix B has been reorganized and specific measures clarified.

GLOSSARY

ALLOTMENT - An area designated and managed for the grazing of livestock.

ANIMAL UNIT MONTH (AUM) - The amount of forage a cow and a calf (6 months of age and under) would consume in a month. This unit is used to calculate carrying capacity and serves as a basis for grazing fees.

AQUIFER - One or more formations that contain sufficient permeable material to yield significant quantities of water to wells and springs.

BACKFILL - Earth replaced after being excavated during construction.

BARREL - A unit of measurement of volume for petroleum products. One barrel (bbl) is equal to 42 U.S. gallons (159 liters).

BENTONITE - An absorptive colloidal clay.

CASING - Steel pipe placed in an oil or gas well as drilling progresses to prevent the wall of the hole from caving during drilling and to provide a means of extracting the oil if the well is productive.

CATEGORICAL EXCLUSION - A category of actions which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in procedures adopted by a federal agency and for which, therefore, neither an environmental impact statement nor an environmental assessment is required.

CULTURAL RESOURCES - Remains of human activity, occupation, or endeavor, as reflected in sites, buildings, artifacts, ruins, etc.

DEHYDRATION - The process of removing water from crude oil or natural gas.

DISPERSED RECREATION - Camping in undeveloped sites and informal daytime recreation.

DISPOSAL WELL - A well to inject produced water into a deep geologic strata.

DRY GAS - Methane, propane, butane, etc., in gas stream from which NGLs have been removed.

EMISSIONS - Discharge of pollutants into the environment, generally used in regard to release of gaseous or particulate material into the atmosphere.

ENDANGERED - Any species that is in danger of extinction throughout all or a significant part of its range.

EPHEMERAL STREAM - A stream that flows only in direct response to precipitation in the immediate watershed or in response to the melting of a cover of snow and ice, and which has a channel bottom that is always above the local water table.

AERIE - The nest of a bird of prey.

FAULT (GEOTECHNICAL) - Fracture in the earth's crust accompanied by a potential shifting of one side of the fracture in relation to the other side.

FLOODPLAIN - The relatively flat ground along both sides of a stream which is covered by water at flood stage.

FUGITIVE DUST - Airborne particulate matter composed of soil resulting from surface disturbance activities.

GAS CAP - The free gas overlying an oil zone, occurring within the same producing formation as oil.

IMPACT - The results of an action on the environment; the impact may be primary (direct) or secondary (indirect).

INFRASTRUCTURE - The facilities, equipment, and services needed for a community to function. It includes roads, sewers, water lines, police and fire protection, schools, etc.

INJECTION WELL - A well to inject a gas or water to maintain the pressure in an oil or gas bearing formation or for the purposes of storing gas.

LINEAR FACILITIES - Access roads, pipelines, railroads, and electric transmission lines which are associated with proposed activities.

MACROINVERTEBRATE - Large, as opposed to microscopic; organisms without spinal columns, such as insects, freshwater shrimp, and snails.

MANAGEMENT FRAMEWORK PLAN - A Bureau of Land Management land use planning document.

MEASURE - See "Stipulation"

MICROGRAM - one-millionth of a gram.

MITIGATION - Includes:

- Avoiding the impact by not taking a certain action or part of an action.
- Minimizing impacts by limiting the degree, magnitude, or timing of the action.
- Rectifying the impacts by repairing, rehabilitating, or restoring the affected environment.

NATIONAL REGISTER OF HISTORIC PLACES - A list of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture.

NEPA - The National Environmental Policy Act of 1969.

OVERTHRUST BELT - A portion of the North American Overthrust Belt whose proven and potential oil and gas resources lie in a generally north-south direction extending from Canada to Mexico, specifically through western Montana, southeastern Idaho, along southwest Wyoming, and in eastern Utah.

PERENNIAL STREAM - A stream or part of a stream that flows continuously during all of the calendar year as a result of ground water discharge or surface runoff.

PROJECT - The activities comprising the Hickey Mountain - Table Mountain oil and gas field development scenario.

PUBLIC LAND - Land administered by the Bureau of Land Management.

RAPTOR - A bird of prey, such as the eagle, hawk, and owl.

RESOURCE MANAGEMENT PLAN (RMP) - A Bureau of Land Management land use planning document prepared in response to the Federal Land Policy and Management Act. These are more recent plans than management framework plans.

GLOSSARY

RIPARIAN HABITAT - A habitat that is comprised of trees, shrubs, grasses, or forbs distributed in narrow strands on the banks or floodplains of streams or rivers.

SENSITIVE SPECIES - A species not yet listed as threatened or endangered. Populations are generally consistently small and widely dispersed, or the species' ranges are restricted to a few localities, such that any appreciable reduction in numbers, or habitat condition might lead to extinction and require effective and aggressive programs to help minimize the chance of official listing as threatened or endangered.

SHUT-IN WELL - A well which is not currently producing but which may be brought into production in the future. A well is shut-in by closing the valves so that it stops producing.

SPUD - To commence actual drilling operations.

STABILIZATION - That point in time when neither erosion nor deposition occurs, which is greater than pre-disturbance. This point must be measurable (site monitoring) and self-sustaining, i.e., not dependent on site maintenance.

STIPULATION - A condition or requirement attached to a lease, usually dealing with the protection of some resources.

STRUTTING GROUND - A specific geographic area where a group of male sage grouse perform courtship displays in the presence of a group of females. Strutting grounds are typically used many years in succession.

TANK BATTERY - A group of tank to which crude oil flows from producing oil wells.

THREATENED - Any animal or plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

TOPSOIL - The uppermost layer of soil containing organic material.

UNIT - An oil and gas unit is a combination of leases designed to provide unified development and operation

of an entire geologic prospect in the most efficient and economical manner under the administration of one operator.

VISUAL QUALITY OBJECTIVE (Forest Service) - A desired level of excellence based on physical and sociological characteristics of an area. Refers to degree of acceptable alteration of the characteristic landscape.

VISUAL RESOURCE MANAGEMENT - The planning, design, and implementation of management objectives to provide acceptable levels of visual impacts for all resource management activities.

VISUAL RESOURCE MANAGEMENT CLASS (BLM) - The degree of visual change that is acceptable within the characteristic landscape. It is based on the physical and sociological characteristics of any given homogeneous area and serves as a management objective.

VISUAL SENSITIVITY LEVEL - An index of the relative degree of user interest in scenic quality and concern and attitude for existing or proposed changes in the landscape features of an area in relation to other areas.

WATERSHED - The region draining into a river, river system, or body of water.

WATER TABLE - The upper level of an underground water body.

WELL COMPLETION - Finishing work on a well and bringing it into productive status.

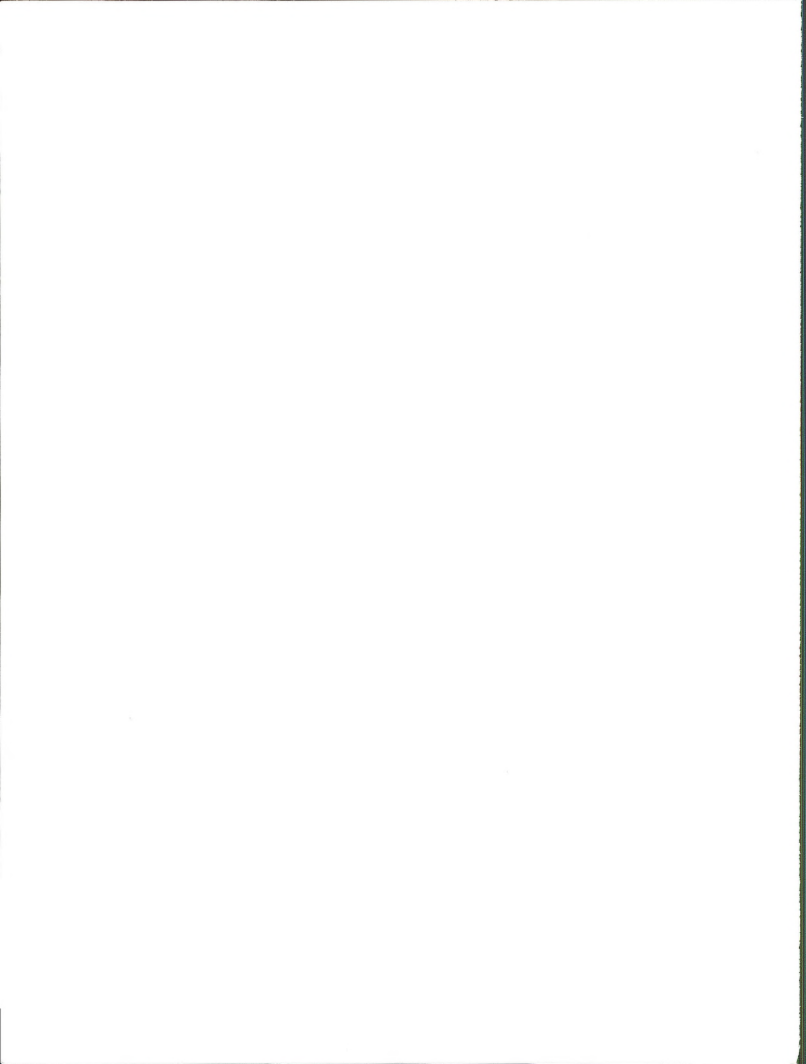
WET GAS - Gaseous hydrocarbons flowing under natural pressures which include NGLs.

WORKOVER - To perform one or more of a variety of remedial operations on a producing well with the hope of restoring or increasing production.

ZERO RUNOFF - No portion of natural or man-caused liquid will leave the disturbed area by either surface or subsurface flow.

ABBREVIATIONS

AO	Authorized Officer
APD	Application for a Permit to Drill (an oil or gas well)
AUM	Animal unit month
BLM	Bureau of Land Management
BOP	Blowout Preventer
bpd	Barrels per day
CaSO ₄	Calcium sulfate
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon monoxide
CU	Construction and Use
DEQ	(Wyoming) Department of Environment: Quality
EIS	Environmental impact statement
ESA	Endangered Species Act
FS	Forest Service
GIS	Geographic Information System
HCl	Hydrogen chloride
HNO ₃	Nitric acid
H ₃ PO ₄	Phosphoric acid
ID	Interdisciplinary
mg/l	Milligrams per liter
ml	milliliters
mmcf/d	Million cubic feet per day
NGLs	Natural gas liquids
NO _x	Oxides of nitrogen
NRHP	National Register of Historic Places
NTL	Notice to lessee
NU	Nonunit
ORV	Off-road vehicles
RMU	Road management unit
ROD	Record of Decision
ROW	Right-of-way
RU	Reed Unit
RVD	Recreation visitor day
SC	Supervisor's closure
SHPO	State Historic Preservation Office
SN	Sundry notice
UDWR	Utah Division of Wildlife Resources
USFWS	U.S. Fish and Wildlife Service
VQO	Visual quality objectives (FS)
VRM	Visual resource management
WCNF	Wasatch Cache National Forest
WGFD	Wyoming Game and Fish Department



REFERENCES

- Resource Technical Reports contain complete lists of sources used in defining the analysis of impacts in this draft environmental impact statement (EIS). Sources listed here are those cited within the pages of the draft EIS.
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